

AMERICAN CULTURFLOWER



MARCH

1938

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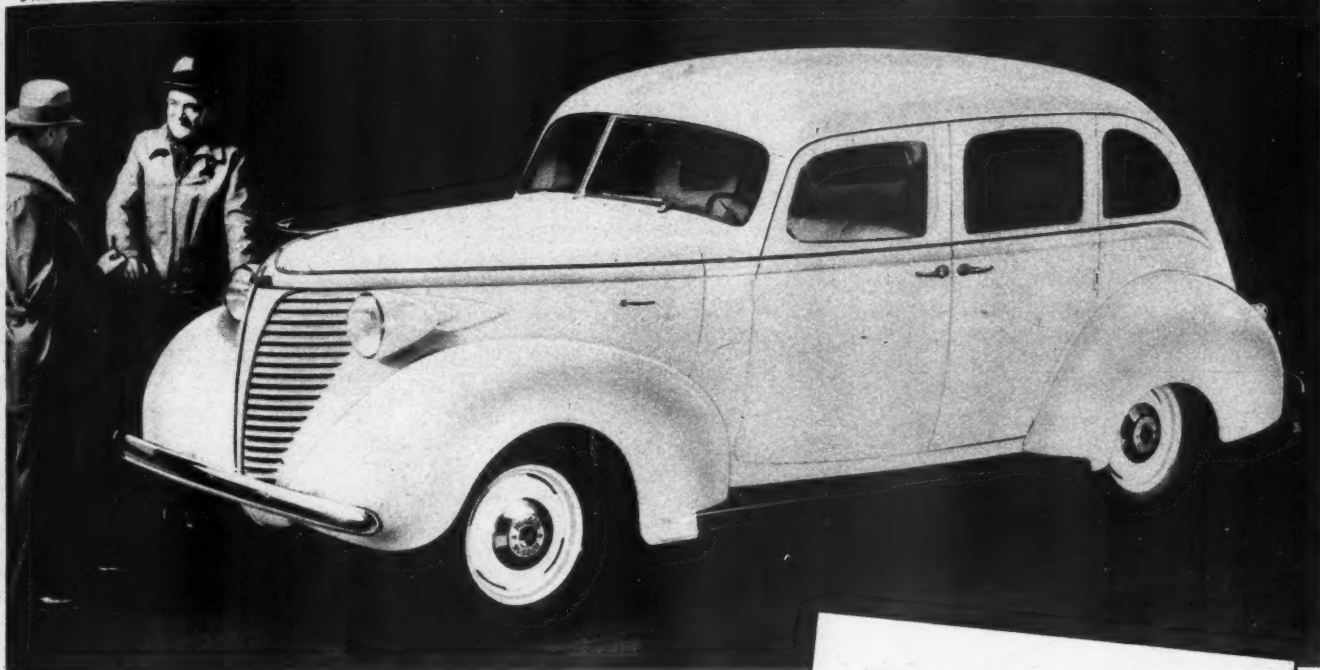
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"LOWEST PRICED" CAR

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And here's what they discovered... that the new Hudson 112 is the *biggest* car in the lowest price field... the *smoothest* running, the *safest*... yet one of the most *economical*!

Widest windshield in any popular priced car. Safest stopping ever built into any automobile, finest hydraulics

plus a *separate* mechanical reserve system that takes hold automatically from the *same* brake pedal if ever needed. Body *all* of steel, of course, including roof.

Only two or three cars at *any* price give you so much seating room, luggage room, head room, leg room. And *no* other car gets so *much* power, smoothness and flexibility from so *little* gasoline.

Come and see the new Hudson 112... drive it. Let it prove everything we've said about it.

HUDSON MOTOR CAR COMPANY
Detroit, Michigan

112-inch Wheelbase . . . 6 Cylinders
. . . 83 Horsepower

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for 3-passenger Coupe; \$724 for Brougham; \$740 for 4-passenger Victoria Coupe, the only 4-passenger Coupe in the lowest price field with all passengers riding inside; \$755 for Sedan—fully equipped, ready to drive, Federal taxes paid—transportation costs and local taxes, if any, extra. With the new low-cost Hudson-C.I.T. Time Payment Plan—terms to suit your crop income.

Companion Car to the new 1938 HUDSON Terraplane • HUDSON Six • HUDSON Eight • HUDSON Terraplane Business and Utility Cars

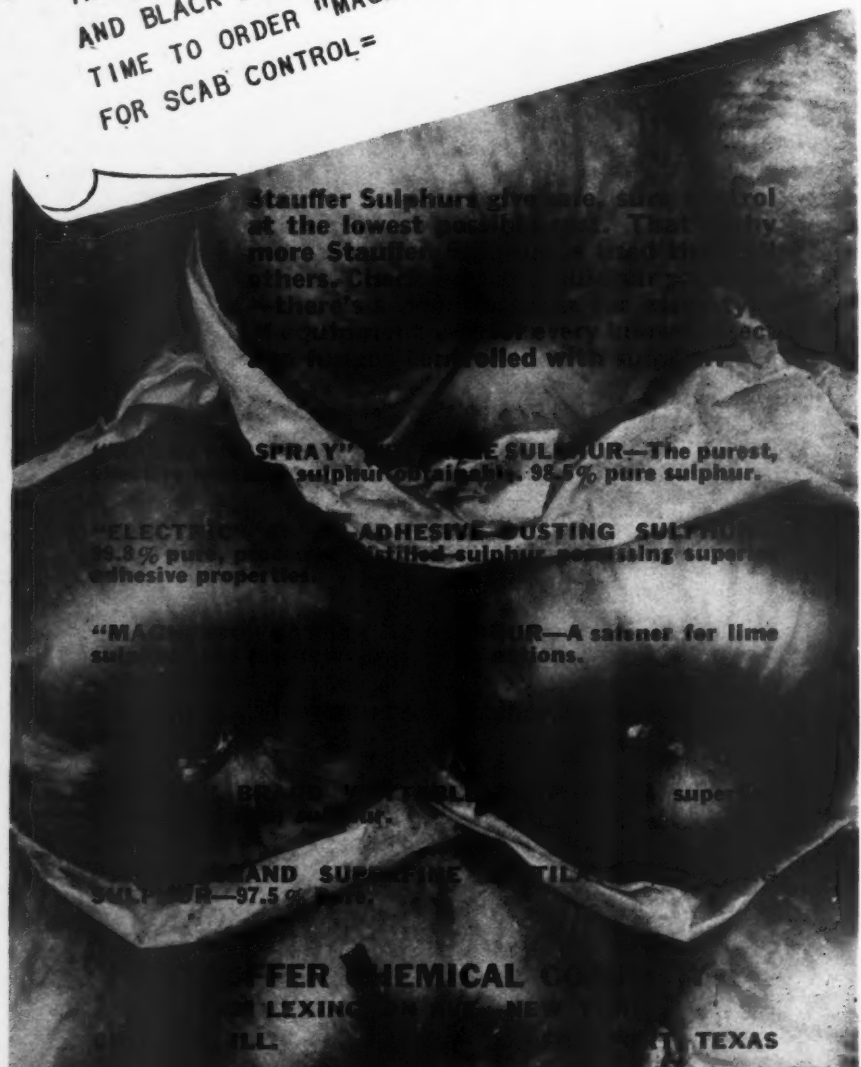
A BETTER DEAL FOR YOUR DOLLAR!

PEST CONTROL

STAUFFER SULPHUR

FLASH

USE "MAGNETIC" CATALYTIC SULPHUR IN YOUR LEAD ARSENATE-LIME SULPHUR SPRAYS. A SAFENER WHICH, WHEN ADDED TO THIS SPRAY COMBINATION, PREVENTS THE FORMATION OF HARMFUL ARSENICAL COMPOUNDS AND BLACK LEAD SULPHIDE SLUDGE. IT WILL SOON BE TIME TO ORDER "MAGNETIC-SPRAY" WETTABLE SULPHUR FOR SCAB CONTROL=



"The standard of value in Sulphur"

Nationwide News

Promotion of Texas' horticultural opportunities seems assured with the expected organization of a State Horticultural Society. Organizing committee representing fruit growers: J. Adam Asch, Mission (citrus); Vander Gauss (berry); Cecil Brown, Friendwood (fig); J. T. Patterson, Houston (grape); R. B. Alexander, Weatherford (peach and plum); W. S. Price, Austin (pecan). Chairman of the organizing committee: S. H. Yarnell, College Station.

▼ ▼ ▼

After a year's operation, outstanding abuses of the Vermont apple grading law have been corrected and there is now much less misgraded fruit, reports H. A. Dwinell, director of markets, Vermont State Department of Agriculture. In 572 different localities, 721 inspections were made.

▼ ▼ ▼

A new grape co-operative is being planned by Michigan growers, led by R. G. Hollis. It is contemplated the organization, to be known as Michigan Grape Products Co-operative, will manufacture juices, jellies, and jams, and handle frozen fruit.

▼ ▼ ▼

Hoge Bros. Fruit Farm in Virginia employs trap doors and chutes in their three-level packing and storage building. Empty containers are transferred from loft to packing room below, and packed fruit is in turn moved to the storage by this method.

▼ ▼ ▼

With an indicated 300 per cent increase in number of growers using the seal in 1938 over 1937, popularity of the Hoosier "Seal of Quality" is evident. Wider range in number of commodities bearing the seal is expected.

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Leading apple growers of Kansas are much in favor of the recently passed upon National Apple Institute research program designed to supply facts directly useful in increasing apple consumption.

▼ ▼ ▼

Stepping beyond contemporary fruit advertising with seven league boots Sunkist comes out with what is apt to go down as classics in revealers of lemon uses.

▼ ▼ ▼

Natural phenomena: Maine blueberry growers in 1937 froze a million pounds of blueberries into \$900,000 liquid assets.

AMERICAN FRUIT GROWER

The
NATIONAL FRUIT MAGAZINE

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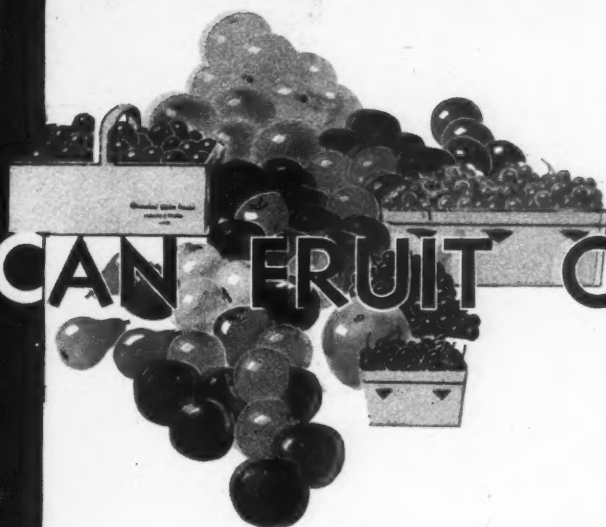
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"PUT THE GREASE WHERE THE SQUEAK IS"

OUTSTANDING characteristics of the American fruit grower are courage, optimism, and the will to win. No season has ever been so good or so bad but he comes out of it at this time of the year with a firm conviction that he will make the coming one better.

But in just what way can he improve his practices of the past and thus gain greater security for his enterprise? No single formula will fit all and no panacea can be suggested, but AMERICAN FRUIT GROWER suggests ten Resolutions for 1938. If others fit better, adopt them, for in the words of an old wag we can say, let's "put the grease where the squeak is."

1. First and foremost we would place careful and thoughtful management. Elimination of "leaks," a study of expenditures, fair but intelligent employment of labor, and a use of all available information, will make for greater efficiency. Wasn't it Theodore Roosevelt who said, "Thrift is wise spending?"

2. The production of clean fruit, for which there is no substitute. Can we not reduce spraying to a reasonably simple formula—a thoroughness which we have never reached before, timeliness of each spray, and the use of any of the various effective spray materials on the market? It is not so much the choice of materials as the human element in their application. It's the man behind the spray gun.

3. A cultural system that conserves the soil. Moisture and nitrogen are more likely to be limiting in most orchards than any other factors, but where exceptions occur the limiting factors should be supplied. This again is a simple, not a complex formula.

4. Moderate pruning. Many young trees are delayed in bearing and many older ones have the crops reduced by over-pruning. Here there may be some disagreement, but study the facts.

5. Eliminate unprofitable sections of the orchard and varieties that no longer fit into present markets. This *does* take courage but it will save expense and leave greater net returns. There is a well merited trend in this direction and it will gain momentum.

6. Place varieties on the market only when in their season and in prime condition.

7. Attack the cull problem at home. A united attack is needed. Remove inferior fruit from the trees before harvest, study the possibilities of by-products in all their forms, turn the necessary culls into some sort of profit if possible, but reduce the amount of undesirable fruit coming onto the general market.

8. Put up a uniform and honest pack. The marketing problem will not be solved so long as the buyer is disappointed in the contents of the package. There is a market for cheap apples as well as the higher priced grades but each should be sold only for what it is.

9. Support cordially all sound movements to improve the advertising and sale of fruits of all kinds. No one has a better product to market.

10. First, last, and all the time have faith in yourself. While you have that you have everything.

Haul Your Fruit Loads With INTERNATIONALS



This International works for the Limoneira Company, Santa Paula, Calif., large-scale lemon growing firm on the west coast.

You get the real measure of International Trucks when they go to work for you, hauling your loads week-in and week-out. Then you have a chance to appreciate and enjoy their economy and sound engineering as they give you A-1 performance at lowest cost per ton or mile. They're ruggedly built to take the punishment of the daily grind in the orchard and on the highway.

Here's another thing to keep in mind when you buy an International—the nearby dealer and Company-owned branch are equipped to give you factory-standard service all the years these trucks work for you.

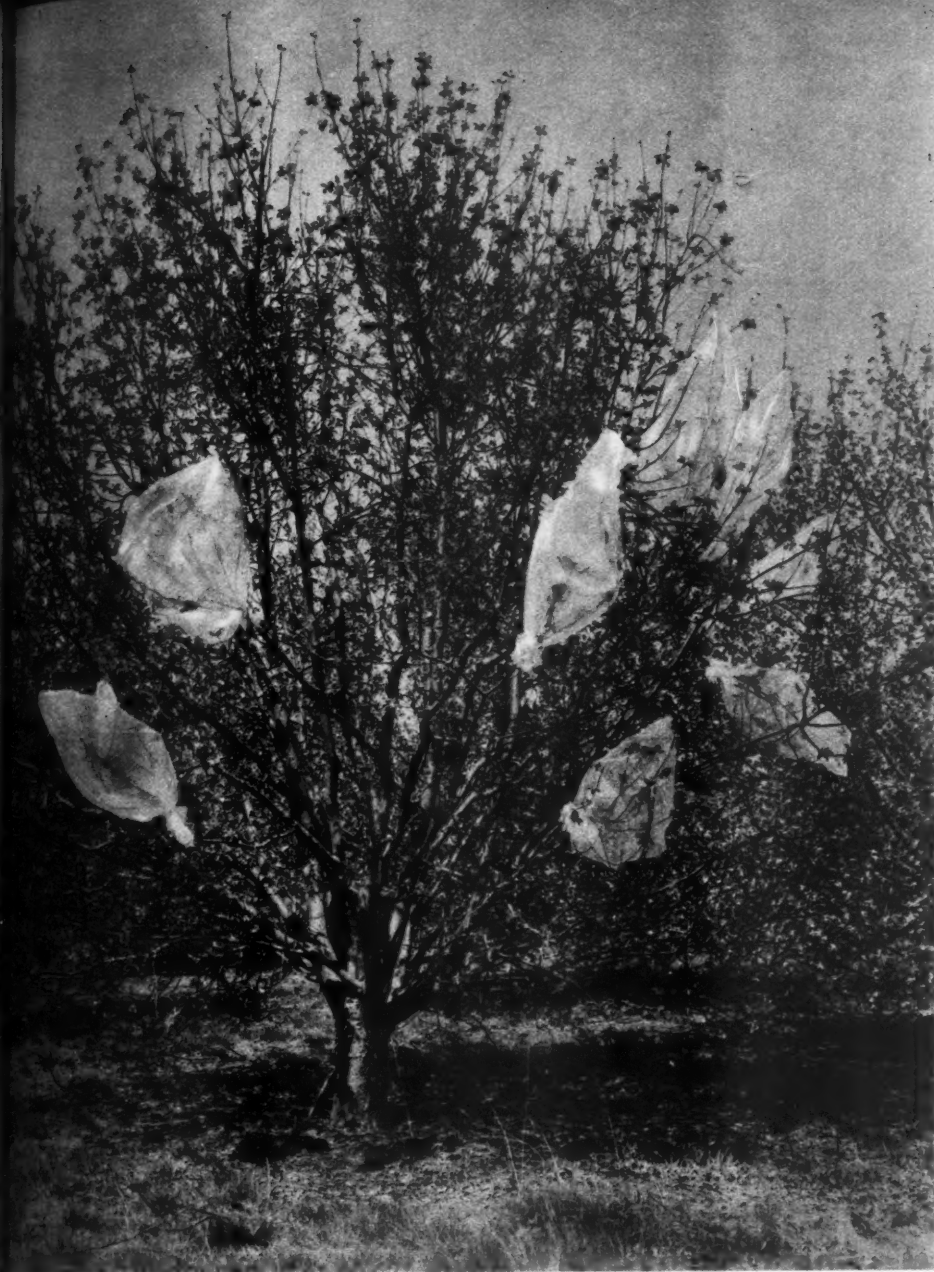
See the new Internationals at any International dealer or branch showroom. Then put the one you need up against your own toughest test and *watch it work!*

INTERNATIONAL HARVESTER COMPANY
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INTERNATIONAL TRUCKS

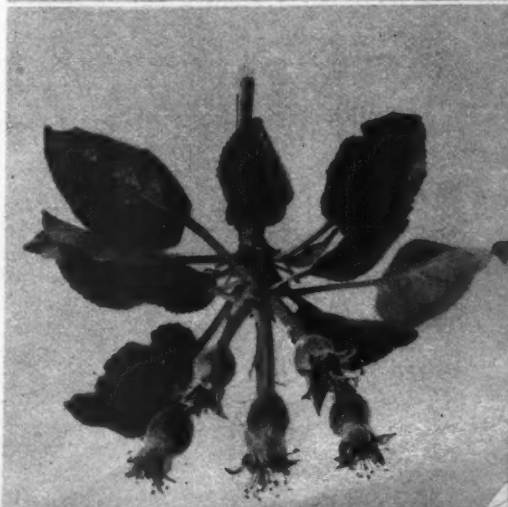
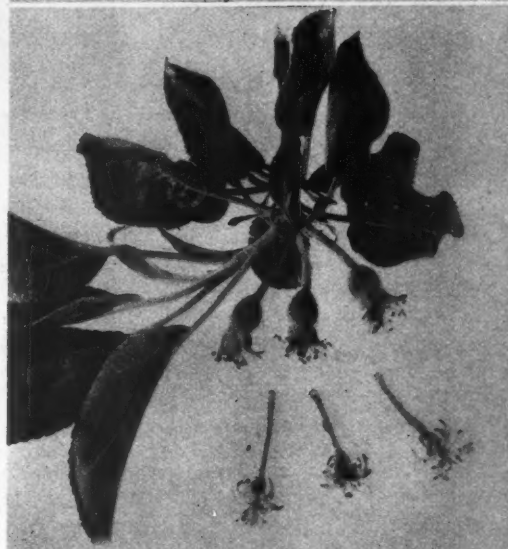
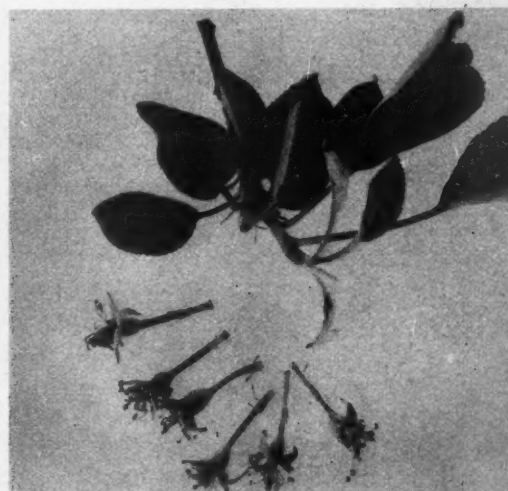


Left—Self-fruitfulness of apple varieties may be determined by enclosing several flowering branches in cheesecloth bags.

Below, top—Flowers not properly pollinated drop soon after the blossoming period is over.

Center—The three flowers that have "set" have been pollinated by a pollinizing variety.

Bottom—With efficient pollination all flowers on a spur may set, but some will drop later.



APPLE POLLINATION AND FRUIT SETTING

By A. E. MURNEEK
Missouri Agricultural Experiment Station

FRUIT growers are quite familiar with the fact that though an apple tree may bloom profusely, only a relatively small percentage of the flowers will mature into fruit. A vast majority of the blossoms drop soon after flowering is over or at subsequent stages in their development. Often enough the various drops may be so great that the final yield is seriously reduced. The setting and development of apples, and most other fruits for that matter, is subject to a proper distribution in the orchard of the right kind of pollen and to effective fertilization of the flowers. To these requirements must be added a satisfactory nutrition of the developing fruit.

MARCH, 1938

The various popular varieties of apples seem to differ considerably in respect to their capacity to function as pollinizers and fruit setters. These differences appear to be hereditary. While not much can be done to modify an inherent condition as regards pollen production and fruit setting, with increasing knowledge of the nature of the difficulties involved, we have learned how to overcome them.

In respect to pollination efficiency and capacity to set fruit apple varieties may be divided into two groups:

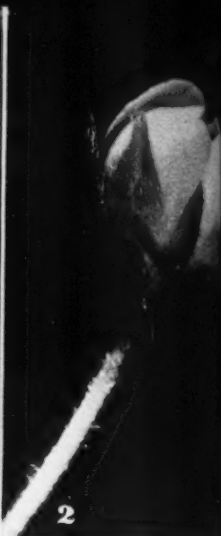
Self-unfruitful: Arkansas Black, Arkansas (Black Twig), Cortland, Delicious, King David, Minkler, Northern Spy, Ralls, Red June,

(Continued on page 22)

AMERICAN FRUIT GROWER

The

CAMERA GROWS a STRAWBERRY



1—Perhaps even more than the strawberry grower himself, the camera has analyzed growth of a strawberry fruit on this page. The first illustration shows development of a bud-tipped shoot.

2—This closeup of the expanding bud shows the delicate hair-covered sepals opening to allow for growth of the flower parts. The white petals enclosing essential flower organs have burst open at the top and subsequent development will expose the protected parts.

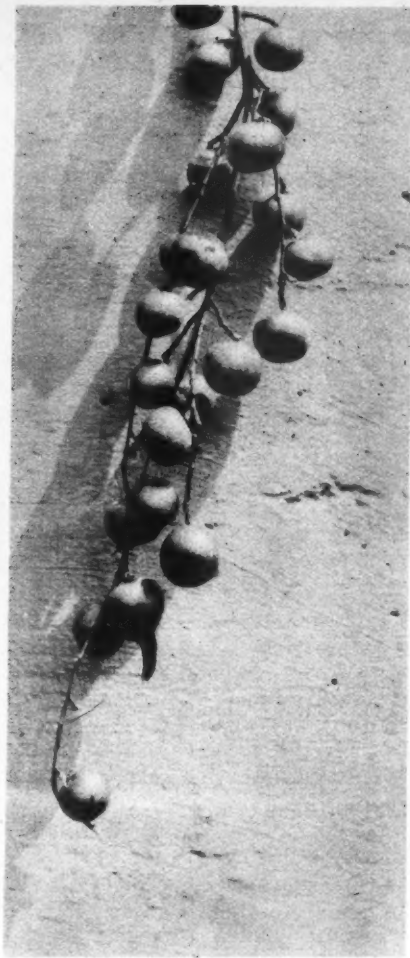


3—Silhouetted against white petals, the reproductive flower parts present a graphic story of horticultural wonder. The dark mass in the center is made up of stigmas and the black-tipped stems are the stamens. The latter release pollen that falls on the stigmas or female parts of the flower for the pollination and birth of a new fruit.

4—Blossom petals have fallen and the mass of individual fruits has started development. This remarkable photograph shows the tiny fruits of the strawberry in unusual detail. However, these individual units in the end will be only the dried, hard, seed-like particles found on ripe strawberries, for the receptacle, under the mass of tiny fruits in the photograph, will expand to form the round, pulpy, cone-shaped structure which is commonly known as the strawberry fruit.

This series of photographs by Black Star.





Good growth is easier to maintain with annual moderate cropping. Compare branch on left from tree with moderate crop with branch on right from tree with excess crop.

ALTERNATE BEARING

What Can We Do About It ?

ALTERNATE bearing, also called biennial bearing, of fruit trees has worried fruit growers for generations, and formerly was responsible for the so-called "apple years" occurring every other year. When New York was the leading apple growing State, and the Baldwin, as a leading apple variety in northern states, alternated in cropping, the "apple year" was easily explained. Now the development of many sections and many varieties has changed the situation considerably. We no longer have strict alternations of crop years for the country as a whole, but biennial cropping does occur in various sections due to the habit of major varieties to bear biennially. Where the major varieties do not alternate in bearing, as with McIntosh, the alternation of crop years diminishes.

This alternate bearing with apples probably constitutes one of the earliest problems in crop production control and is still with us, regulated largely through the laws of nature. As with proposals to control production of other crops, many remedies and formulas have been advanced to change this bad "habit" of apple trees, so commonly enjoyed by several apple varieties including Bald-

win, York Imperial, Wealthy, Yellow Transparent, and Yellow Newtown. Even many supposedly annual bearing varieties frequently have fallen into these evil ways, including Stayman, Grimes, Rome, Jonathan, Ben Davis, and even McIntosh which has been held up as a model for regularity.

What about the several panaceas to cure this habit? Are the trees in the position of the man suffering with a common cold, whose friends offer a thousand and one cures and none of them of any value? Fortunately, no! The accumulated knowledge in plant sciences in recent years has given us insight into nature's laws in this regard. The many suggested remedies are now pieced together and analyzed in their combined effects to render a solution.

Pruning in the off-year, application of nitrogen fertilizer in the off-year or in the spring of the off-year, removal of blossoms by chemicals or by hand, thinning of the crop, effects of spring frosts, and irrigation have been studied in relation to tree growth and fruiting of biennial varieties.

Each part of these studies has led at one time or another to the belief that a single change in practice, such as pruning or fertilizing, would re-

By A. LEE SCHRADER
Head, Department of Horticulture
University of Maryland

sult in annual bearing of biennial bearing trees. Unfortunately, it has not been so simple a procedure. However, out of all of the studies, three general controlling principles have evolved which might be stated as follows:

1. As a tree grows, so it will fruit, or in other words, yield of fruit is related to amount of tree growth.

2. Blossoming and fruiting are exhaustive processes, utilizing food materials.

3. Blossom bud formation requires the same class of nutrients required for growth of tree and fruit.

In discussing principle number one, it might be recalled that the alternate bearing habit often has been considered as an inherited trait of a variety, fixed and immutable. Since annual bearing of so-called biennial varieties has been recorded, the habit cannot be considered as fixed in any variety.

Now it is realized that the length and diameter of terminal and spur growth, as well as type of leaf

(Continued on page 25)

PEACHES

PRUNING

"The peach tree from year to year," says Dr. A. Lee Schrader of the University of Maryland, "may present a new problem of pruning which cannot be solved by experience of previous prunings." One grower, he points out, produced poorly-colored peaches under a dense covering of foliage. The grower had always used a "table-top-shearing" type of pruning and had been successful until he increased his application of nitrogen fertilizer. The response to nitrogen in added amounts was a dense growth of foliage which

Tests indicate that trees pruned so that peaches are exposed to sunlight, such as those shown here, will give higher yields of well-colored fruit. Corrective pruning will expose fruit on trees having heavy foliage growth in the tops.



cut off light from the fruit. Measurement of the light conditions showed only 200 foot candles under the tree foliage compared with 8200 foot candles in the open sunlight.

Dr. Schrader, reporting Maryland tests, states that corrective pruning of young trees too severely headed back proved easy to accomplish. The corrective pruning consisted of a light heading of main terminals and considerable thinning out of crowding branches to develop well-spaced scaffold branches.

In correcting bearing trees with dense growth of new wood in the tops, the pruning was not so simple. Two seasons of pruning were necessary to make a change in the top growth and to bring about an increase in fruit color. There was no more heading of the new wood.

Considerable thinning out of upright growth was accomplished the first season as well as cutting back wherever possible to good lateral branches. Slight improvement in openness of the tree and subsequent betterment of fruit color was found the first season.

During the second season, with further thinning out and much fewer upright shoots to combat, the cutting back to laterals in two or three-year wood resulted in an open, spreading tree with fruits colored 30 to 50 per cent contrasted to five per cent or less on trees pruned by the former method of heading back to new wood. In addition to the better color of fruit on these trees, the average yield was more than a bushel over the check trees.

Experience, summarizes Dr. Schrader, is a good teacher, if you can interpret its many lessons. The results in Maryland orchards serve to emphasize the importance of knowing tree response to pruning cuts and using the saw and shears with good judgment, based on this knowledge.



BERRIES

STRAWBERRY PLANTING

When setting strawberry plants, it is best to place the crowns right at the ground level. If the crowns are too low, the plants may smother, and if too high, there is danger of injury from low winter temperatures.

Experience has shown that the best place to locate the strawberry "patch" is on a slope that receives maximum sunshine. The more sunshine, the earlier the berries ripen. Sandy or gravelly soils also hasten ripening, but good loams will give better yields. Since strawberry plants are shallow-rooted, they may be killed by heaving or freezing-out when grown in heavy clays, so this type of soil is to be avoided.

Air drainage, too, is of importance when selecting the strawberry location. Strawberry plants bloom early and blossoms are often killed by late frosts where there is no natural protection.

Grubs seem to have a preference for strawberry roots, and a sod plot is likely to harbor these pests. It is, therefore, good practice to set new plants only on soil that has been cultivated. Well-manured land or that which has had green manure turned under will give the best stands of new plants.

Although most strawberry varieties need no pollinizing varieties planted with them, there are a few which must have other varieties nearby to insure fruiting. Most of the popular varieties will give crops when planted alone, but even these will produce better yields when interplanted.

Early spring has proved the best time for planting in all except the southern sections. Dry weather after

(Continued on page 34)

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SWEET CHERRIES

Our Luxury Fruit

By FRANCIS M. COE
Utah. Agricultural Experiment Station

A good set of Bing cherries is shown above. Adequate pollination is essential in sweet cherry orchards, since all varieties of this fruit are self-sterile and require cross-pollination.

SWEET CHERRIES! Ripe, red, luscious! Great clusters festooning bending branches in the cherry orchard! Fortunate indeed the small boy who has a great spreading Black Tartarian tree to climb when warm June days ripen the tender purple fruits. Fortunate, also, the favored sheltered districts where this most particular of hardy tree fruits thrives and yields abundantly of big black Bings and crisp mahogany-colored Lamberts. Fortunate the American consumer, too, who has this epicurean luxury fruit brought to his table to enjoy at prices within his reach.

Only a few years ago the problems of the sweet cherry grower were those of how to grow the crop and prepare it for market. There were scores of eager marketing agencies anxious to pay him a good price for his product. But alas! Like the peach, orange, and grapefruit, the sweet cherry could not stand prosperity! High prices and lucrative returns to growers—two cars of Utah Bings netted 19 cents a pound in 1927—resulted in heavy plantings of sweets in California, Oregon, Washington, Idaho, and Utah from 1924 to 1930. Sharply increased shipments, combined with the severe reduction in demand accompanying the business recession, which hit the high-priced luxury fruits the most, brought price levels far below cost of production in western districts.

While prices and returns have recovered from their depression lows,

the high proportion of young trees which have not reached full bearing age makes the attainment of the high prices enjoyed previous to 1929 unlikely in the near future. On the other hand, new plantings of commercial sweet cherries in favored locations have been moderate, and the long time outlook for this fruit appears favorable.

To a large extent the outlook for the production of sweet cherries depends upon the ability of the industry to stimulate greater demand for this delicious and refreshing "first fruit" of summer. Mass production industry has pointed out the way to increase demand for a product through lowering production and marketing costs in order to permit profitable production at prices low enough to stimulate consumption. Cherry growers may well apply these same tested principles to their own business, by reducing unit production and marketing costs to a minimum.

Perhaps the best means of reducing to a minimum production costs of sweet cherries is to make sure that no factor required to produce high

yields of fruit is overlooked. Climate, soil, site, water supply, variety and strain, rootstock, quality of nursery trees, planting, pollination, training and pruning, cultivation, fertilization, cover crops, protection from insect pests, diseases, rodents, and winter injury—all are important in building a high producing sweet cherry orchard. After the orchard reaches bearing age, additional problems of providing bees or other pollinizing insects, frost prevention, pruning, spraying, maturity, harvesting, grading, packing, precooling, refrigeration, and marketing present themselves.

While detailed consideration of all these factors governing yield and quality of product is not possible here, a brief review of factors in cherry production which differ from those of other fruits, and those in which recent developments offer possibilities of lowering costs of production, may be of value.

Climate is probably of greater importance with the sweet cherry than with any other commonly grown fruit because of its narrow range of adaptation. Although of moderate hardiness and capable of withstanding lower temperatures than the peach when well matured, commercial varieties of sweet cherries are unable to withstand wide fluctuations of temperature, are extremely sensitive to sunscald or "southwest injury," and do not recover as readily as the peach from winter damage. In Idaho, V-shaped board protectors

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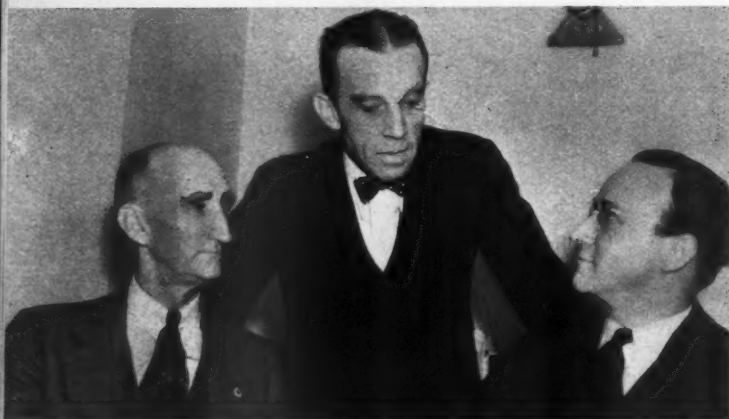
FIVE-POINT PROGRAM OF NAI...



New president of the National Apple Institute is Kirk L. Keller, Creve Coeur, Mo. Keller is president of the Missouri Horticultural Society and has been active in NAI activities since the start of the organization.



Major C. E. Chase, left, secretary-manager of the Washington State Apple Advertising Commission, and Paul Stark, Louisiana, Mo., take advantage of a brief recess during the meeting for a chat on apple advertising and promotion methods.



WITH the backing of every important apple section and organization, members of the National Apple Institute at a recent meeting in Cincinnati formulated a comprehensive program for nationwide promotion of apples. This fourth annual meeting of the institute saw the unification of regional efforts for strengthening of the national organization. While the regionals will continue their efforts in specific sections, the program of the national group covers general and necessary endeavors for the successful distribution of apple promotional material.

The five-point program consists of:

- 1—The elimination of cull apples from competition with quality apples.
- 2—The correlation of regional programs for direct promotion on the use of apples.
- 3—Research.
- 4—Educational promotion, such as clip sheets to editors and radio material.
- 5—Unification of regional institute purchases, such as printing, supplies, etc., to bring about a saving to the regional groups through the use of standardized materials.

Kirk L. Keller, president of the Missouri Horticultural Society, whose efforts in behalf of the Missouri Apple Institute during the past season focused national apple advertising attention on his State, was elected to head the National Apple Institute. John Lyman, Middlefield, Conn., president of the New York-New England Institute, will continue as vice-president, and Dr. H. E. Barnard as secretary. W. B. Baughman of New Concord, Ohio, was re-elected treasurer. Prof. B. S. Pickett, president of the American Pomological Society, is chairman of the board of directors, and Dr. J. H. Gourley, retiring president of the NAI, is director of the research committee. Board of directors of the national organization is made up of representatives of each apple section, as are the other special committees.

Left, top—A leader in apple advertising, Carroll Miller, center, secretary-manager of Appalachian Apples, Inc., talks with G. B. Travis, assistant agricultural counsel for National Association of Food Chains, right, and C. Purcell McCue, prominent Virginia grower and director of Appalachian Apples, Inc. Center—Dr. R. R. Sayers, left, of the U. S. Public Health Service, lunches with D. B. Perrine, Centralia, Ill. Bottom—L. V. Doud, president of Indiana Horticultural Society, and R. K. Caldwell (right), Batavia, Ohio, grower.



This Business of GROWING GRAPES

By F. N. FAGAN
Pennsylvania State College

Good soil care, correct pruning, and thorough pest control have resulted in the strong cane and foliage growth shown above, which is necessary for high production. Photograph courtesy Pa. State College Agr. Exp. Station.

It is a real pleasure to write an article about grape production because of the history connected with this fruit. A critical study of the history of all our fruits shows that there is no one item of cultural practice that points the way to successful production.

The final success, shall we say financial success, of any fruit plantation depends upon the ability of the management to so care for the plants—in all details balancing one item of care with all other practices—that they will respond to the treatments with high yields of fruit each year.

It is a pleasure to note in the history of grape growing that beyond any question of doubt the grape business has been a venture that has paid for the "living" of many thousands of people. One needs only to turn to the history of grape growing in Europe and North America to be impressed with the importance of the grape industry.

The grape, being one of the oldest of cultivated plants, we naturally would expect to find the production practices fully understood by all farmers producing grapes as a money crop. To a large extent this

is true, for when we turn back into the pages of history, we find that the pruning of the vine has changed but little during the last 500 years. The pruning principle has remained the same because the habit of growth of the vine has remained unchanged. Certain changes have entered the business because of the culture of different varieties and species of the grape under many different conditions. Thus the spur system of training and pruning in the Old World has through years of experience on the part of growers given way to the many systems of long cane pruning and training now found in the vineyards of eastern North America.

The fertilization of the vine in North America has changed during the last 80 years, but nevertheless in principle the changes are minor. Both in Europe and North America the early vineyard owners added plant food by way of application of

manures. When the demand for plant food by growers became greater than the manure supply, the grower turned to the fertilizer bag. His vineyard then got the needed nitrogen, and in some cases its phosphate and potassium, in different form.

Some change has taken place in soil cultivation, but in principle the change is slight. With the change-over to chemical fertilizers many growers found that their vineyard soils were being depleted of organic material, since this was not now being supplied by way of barnyard manure. This condition brought about the use of cover crops in the vineyard. To grow enough organic material in the form of cover crops, shorter periods of clean soil tillage in the vineyard has been the result.

The spraying of vineyards for the control of insects and disease pests has changed greatly since the first applications were given the vine and fruit in Europe. However, the first spray compound used was "Bordeaux Mixture," and it is still the important compound used for grape disease control. So again we have another cultural practice in grape

(Continued on page 24)

APS

A PAGE CONDUCTED IN THE
INTERESTS OF THE AMERICAN
POMOLOGICAL SOCIETY

"APPLE ADVERTISING—DOES IT WORK?"

REAL money has been spent this year to advertise "King Apple." Grocers have co-operated as never before because some very well-directed push was put into the selling campaign. Colored posters, pamphlets, and recipe books have decorated grocery stores. Newspaper ads extol the food values of apples, and radio has added its voice. With such concentrated effort much has been accomplished to reawaken an appetite for apples. The large crop of 1937 was a difficult problem and prices to growers have been discouraging in many regions. That the advertising campaign was of real benefit is the opinion of those who have been close to the situation. Prices have been somewhat discouraging, but what might the result have been were it not for the advertising campaigns?

Every one of the regional apple groups has put a great deal of energy into advertising apples this year and an excellent start has been made in the right direction. There is every reason to believe that advertising if persisted in will do exactly as well by the apple as it has done by the other well advertised fruits.

Let Carroll Miller, secretary-manager of Appalachian Apples, Inc., tell the story of achievement as he told it at the recent meeting of the Peninsula Horticultural Society's annual convention at Camden, N. J.

"From very direct and pungent experiences during the past two years crowded with apple promotion work, I can answer emphatically the question which is my topic, 'Apple Advertising: Does It Work?' The answer is, 'Yes.'"

"It is an axiom among advertising people that 'Good advertising of a good product ALWAYS increases sales.' The effects are as certain as that.

"Further, apples are responding splendidly to the advertising. The public as a whole likes apples. They have slipped from the public notice lately because the other fruits and vegetables have been so insistently telling the housewife and the grocer about themselves. Apples have been 'the forgotten fruit.' We are finding that we have but to call the Public's attention again to apples, and the response is quick and favorable.

"The grocer is in position to boost or to lower the sale of apples. By displaying them prominently and suggesting them to his customers, he can quadruple his apple sales. By putting them way back in the store, out of sight and mind of himself, his staff and his customers, there will be few apple sales. So we want first to be good friends of the grocers; to have them friendly toward apples; intelligently friendly. So we furnish them, free, display materials for windows, store interiors, counters. We give them literature about apples; talk to them; work with them; get them to put on

special displays of apples; try to convince them that there is at least as much profit in apples well handled as in oranges, grapefruit, etc., which they have been taught through years of grocer-service work by the citrus people to display properly and to 'push' to their customers.

"Backing up this work with the grocers, we use, wherever our budget permits, newspaper and radio advertising, direct to the public. This brings the public in to ask for apples. The grocer likes this. He works harder for apples when he sees that we growers are putting our dollars into his area to help him sell apples.

"To date, this season, we have placed our complete sets of apple display materials in 34,000 grocery stores of the Central East and South, which is our natural marketing area. We have conducted special apple campaigns in 18 cities, one by one; will work some six or seven more before the active apple selling season closes. It usually takes about one week to organize our campaigns in the larger cities.

"Our work, coupled with the work of the other regional apple advertising associations of the nation, has brought noticeable results, this season and last. It is not possible to reduce this aid to exact cents per bushel; but consider this: the 1937 apple crop, nationally, is 33 millions of bushels larger than the 1935 crop. It might be reasonably expected that prices this season would rule much lower, because of this huge 33,000,000 bushel increase. Yet prices have been almost exactly the same as in 1935, or just a trifle stronger. That is about the strongest evidence we can offer you, unless you come with us and see what we are doing as we do it.

"We were given powerful aid this season by the Organized Grocers of the nation. At the request of all apple-producing sections last August, the Organized Grocers of the nation agreed to put special selling efforts on apples, because of the big crop and likelihood of ruinously low prices. They have lived up to that agreement. At least 50,000 of the nation's largest-volume groceries have been 'pushing' apples actively, since mid-September, through their own advertising, displays, and sales efforts. This, with the advertising-promotion work done by the several regional apple advertising associations, has resulted in the largest acceptance (purchase) of apples by the American public in the memory of anyone. We get unanimous reports of this from all over the nation, and from all walks of life. This has been the thing that saved us from a thoroughly disastrous apple deal, I believe. This is a striking illustration of the possibilities in apple promotion when the growers of the nation are organized and prepared for it."

John Lyman, president of the New York-
AMERICAN FRUIT GROWER

New England Apple Institute, in a report to the New York State Horticultural Society at Rochester, January 14, 1938, summed up some of the achievements of the New York-New England group as follows:

The popularity of the "Big Apple" dance was capitalized upon by presenting McIntosh apples at all of the leading first exhibitions of the "Big Apple" dance in New York City, Boston, and Buffalo. The active co-operation of the National Association of Food Chains was secured in pushing apple sales with five special "apple week" campaigns. This co-operation was secured by working in co-operation with the other national advertising groups. This was declared to be the most intensive drive ever put on by this association of retailers. The food chains have co-operated in preparing and using a large amount of advertising material for apples.

Grocers have been induced to co-operate in improving the merchandising of apples, and the institute has furnished over 300,000 pieces of attractive and effective advertising material to the trade.

Other effective methods of advertising the apple have been utilized by the institute, such as providing weekly radio programs over 62 stations, and apple stories went to over 1000 newspapers. Many other avenues of publicity were used, and Mr. Lyman finished his report by saying: "We must not lose the ground we have gained. We must have courage to press forward in the face of criticism. With the leaders of the apple industry co-operating, I predict that we can make 'King Apple' popular in the diet of all consumers."

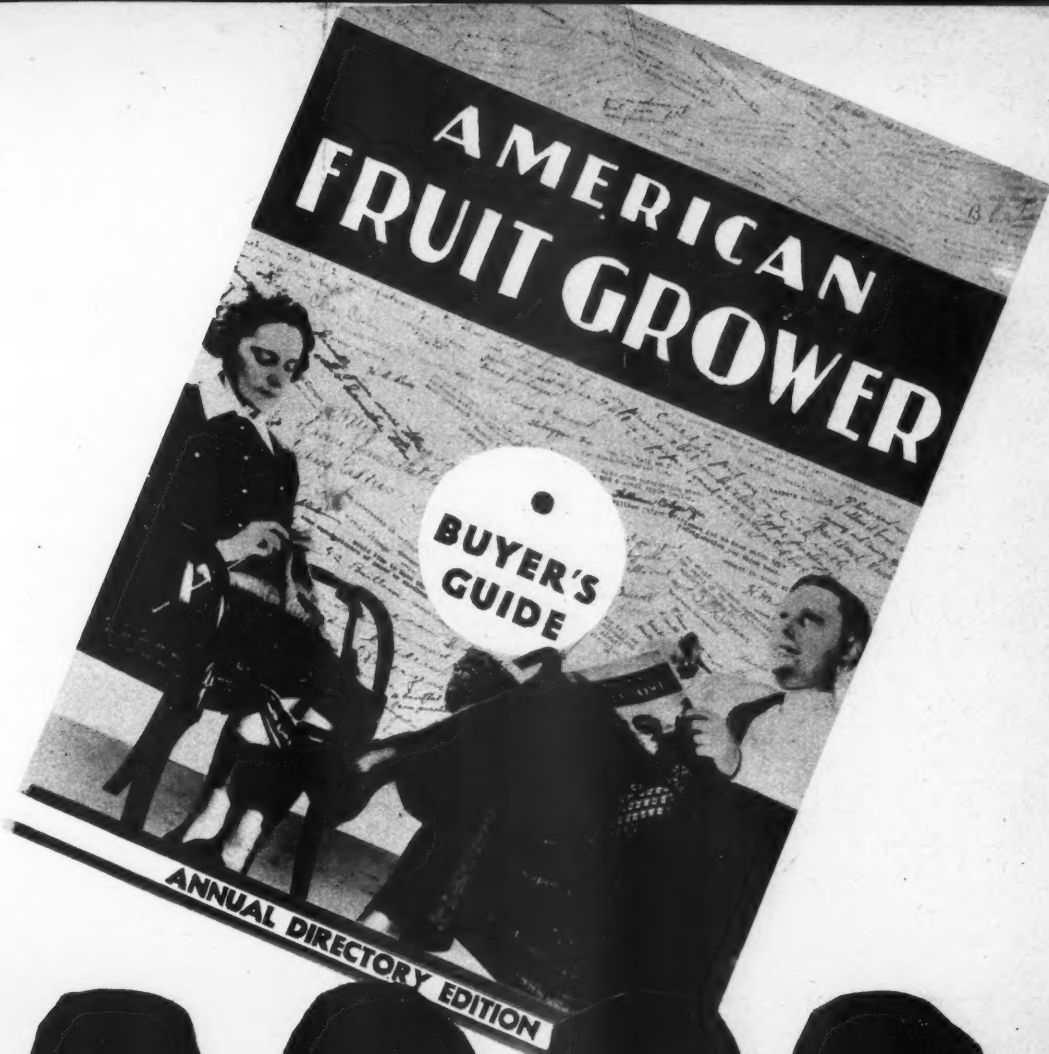
The work of the Ohio Apple Institute was described by W. B. Baughman, of New Concord, Ohio, at the Springfield, Mo., joint convention of the APS and Missouri State Horticultural Society held in December. "There was a big demand for the cook books published by the Ohio institute," said Mr. Baughman. "We printed 100,000 cook books; we printed them in two colors, and we delivered them to the grower at \$4 per thousand books. Another book cost one and one-half cents each. Many growers in Ohio had 10,000 of these books printed with their names included on the front cover. One chain store system purchased 30,000 apple cook books and made extensive use of them in connection with their apple sales."

The Michigan Apple Institute has also been in the campaign. The Pacific Northwest states have raised a large advertising fund by legislative action, which is being ably utilized to advertise the Northwest apple.

The general feeling is that the money and effort put into advertising the apple this year have been an invaluable aid in moving the crop. Growers and dealers have been brought closer together and that is a good start.

H. L. Lantz
SECRETARY

MARCH, 1938



COMING! *The Annual June Directory Edition*

and BUYER'S GUIDE

ONCE again a staff of specialists is busy compiling the annual June Directory Edition of AMERICAN FRUIT GROWER. And once again this year's Directory and Buyer's Guide will be the most complete, most comprehensive, and most useful reference edition ever published for the commercial fruit growing industry.

To make this year's Annual Directory and Buyer's Guide more convenient and practical than ever before as the fruit grower's handy reference book, special attention is being given to complete indexing. Everyday questions about equipment, materials, supplies and accessories of all kinds for practical and profitable operation of a fruit farm will be easy to locate in the pages of the June Directory Edition.

This special issue will have care-

fully prepared sections devoted to each important phase of fruit farming. Each one of these sections will list information and reference material which the fruit grower will have need of throughout the year. And the fruit grower's wife will also find invaluable reference information at her finger tips in the pages of the June number.

To make the coming June Directory Edition and Buyer's Guide the biggest—and the BEST—published to date, our staff of research workers has been busy for months compiling, revising and adding to the indexed lists of manufacturers and distributors of all types of implements, tools, equipment and machinery required by fruit growers; materials and supplies of every kind; seasonal requirements; construction materials;

marketing and selling accessories, as well as household needs on fruit farms.

In a real sense the June Directory Edition and Buyer's Guide of AMERICAN FRUIT GROWER will be "required reading," and evening after evening the fruit grower and his wife will spend profitable hours perusing its handily arranged pages of information and listings.

STATE NEWS

NEW JERSEY—Incorporation papers for New Jersey Fruits, Inc., an organization to promote the use of apples produced in this State, were filed in Trenton on February 9 by New Jersey fruit growers.

The new organization, sponsored by the State Horticultural Society, proposes to establish a promotional and advertising campaign to increase New Jersey apple consumption. The campaign is to be financed through voluntary contribution by growers on the basis of one cent per bushel.

C. B. Lewis of Riverton is president of the new marketing group; Joseph Barton, Marlton, vice-president; Lawrence Smith, South River, secretary; and Prof. A. J. Farley, secretary of State Horticultural Society, New Brunswick, treasurer.

MINNESOTA—Max A. Nash of Tracy, a Minnesota Fruit Growers Association member, has spent considerable time studying the action of honeybees in relation to the pollination of his plum orchard. He has plenty of bees around at blossoming time but the critters won't go to work, at least not on his plums—instead, they work freely on nearby dandelion and golden willow. As a consequence, although his trees have bloomed profusely for



several years, he has had only one decent crop of plums.

Named varieties of Minnesota hybrid plums are known to require cross-pollination with native Americana type varieties or other compatible pollinizers. Mr. Nash has some of these pollinizers in his orchard but to help things along he placed large bouquets of wild plum bloom in containers of water hung in the blossoming tops of his trees. Almost immediately the wild plum bloom attracted numerous bees until these bouquets were fairly buzzing with them, but the blossoms on his hybrid plums remained almost deserted.

It is probable the fruit blooms ignored by the bees were those that produced nectar of low sugar content. If this is true, then it is not enough to know that certain varieties are compatible for cross-pollination. We must also know something about the behavior of honeybees under field conditions with respect to these varieties.

Mr. Nash believes that consideration must be given to environment in relation to competitive nectar-producing plants. He suggests that in isolated locations far removed from sources of high-sugar-content nectar the bees would work satisfactorily on blooms that produce nectar of low sugar content. The same might be true, he suggests, in certain years when the blossoming period of varieties that produce nectar of low sugar content did not overlap with the blossoming period of high-sugar-nectar plants.—J. D. WINTER, Sec'y, Mound.

KANSAS—Big question in the minds of many Kansas fruit growers is the replanting of depleted orchards and small fruit acreage. Due to drought, excessive heat, and insect pests, plantings of young trees and small fruits during the past three years have met with disaster. New plantings this spring will be done, as a rule, on the contour and with the view of soil conservation.

The project of irrigation for fruit growing in many of the Kansas river valleys where

shallow water is available and where proper soil surveys have been made is awakening wide interest among apple, peach, and cherry growers. Irrigated orchards in these valleys are netting good returns.—GEO. W. KINKEAD, Sec'y, Topeka.

TENNESSEE—Many years of dashed hopes prompted I. C. Murphy, one of our best informed fruit growers, to set us right on a moot point in apple growing. We were examining his trees hoping to find some opti-



mism in what we called "fruit buds". After refusing to admit that our choice of even the most promising were fruit buds (and we were prepared to offer at least an argument), he said, "No, they're only bloom buds." He's got something there, boys!

M. Cook, whose orchard at Santa Fe consistently yields profitable crops, mixes brains liberally with his fertilizer and spray materials. He showed us a block of 10-year-old Stayman, which had borne a heavy crop last year, and it was uniformly set up with "bloom buds" for this year. Knowing the bursting energy of Stayman apples, he had planted these Stayman trees on contours on thin land around the crest of a hill and then mulched them heavily.—A. N. PRATT, Nashville.

RHODE ISLAND—Winners in preliminary contests being held by Home Demonstration Clubs and the Granges are to compete in Rhode Island Fruit Growers Association annual apple pie baking contest to be held during the Agricultural Conference, March 17-19, in Providence. Competition promises to be keen—Rhode Island women enjoy a reputation for making good apple pies. Annual meet of the association: March 19, Providence.—E. P. CHRISTOPHER, Sec'y, Kingston.

WEST VIRGINIA—Some headlines from the 45th annual convention of West Virginia Horticultural Society, February 2-3, Martinsburg:

1. The "fresh pack" (from cold storage directly on order) is so superior to "the trade," the grocer and the consumer, that it must ultimately supersede the present "packed



for storage" system; and the sooner, the better.—Henry W. Miller, Jr., retiring president, Paw Paw.

2. Twelve million pounds of cherries are grown in this immediate area, and trees are just coming into full bearing. The wisdom of additional cherry plantings here now, in view of production in other areas, is not established.—John F. Ambrose, Charles Town.

3. For West Virginia, plant peaches that are harvested around August 18, for a market.—J. Howard Rannels, Romney.

4. Load cars "end-to-end"; start baskets at one bulk-head and build that row straight through to the other end. Stagger the second row into the "Vs" resulting. This gives the "22 by 22" method. Place a board across the three lower layers in each end row, to prevent "toppling".—J. P. Blount, Assn. of American Railroads, New York City.

AMERICAN FRUIT GROWER

5. Mechanical graders, washers and washing, truckers' rough handling; these are equally responsible with pickers' and packers' carelessness in causing excessive bruising.—H. W. Prettyman, Inwood.

6. The Golden Age for Fruit will be the coming 10 years.—Jacob Felt, Memphis, Tenn.

7. Apple growers must make friends with the grocers. They are "personal sales representatives" for apples to the public; and a salesman who knows but little about a product or is not friendly toward it, is a heck of a salesman.—C. R. Miller, Appalachian Apples, Martinsburg.

8. Officers for 1938-39: President, James E. McDonald, Martinsburg; vice-president, Dr. W. C. Van Meter, Petersburg; treasurer, Malcolm M. Brown, Martinsburg; secretary, Carroll R. Miller, Martinsburg.

9. Development of new markets and new customers is the most important work ahead for apple growers.—Resolution adopted.—CARROLL R. MILLER, Sec'y, Martinsburg.

NEW HAMPSHIRE—Banding together to protect a section of New Hampshire that has been producing fine peaches for the past 60 years, orchardists of the Beauty Hill section of Barrington have appointed a special com-



mittee to mark and condemn peach trees infected with peach yellows disease. Condemned trees are to be dug up and burned.

This disease in the past four years has killed thousands of trees in the State. It was first reported in New Hampshire in August, 1933, when a Barrington grower announced that part of his orchard had leaves of a sickly yellow color. Today this grower has none of his 60 trees left. All were wiped out by peach yellows. Another orchardist of Barrington has had to destroy over 700 peach trees since the disease started. A third grower's orchard of 200 trees has been reduced to five by this same trouble.

Members of the committee: C. O. Rawlings, extension horticulturist at University of New Hampshire; Dan Adams, county agricultural agent; and one grower.—H. L. STARBIRD.

WISCONSIN—From the Carpathian Mountains in Poland comes another supply of Crath's Carpathian English walnut seed which will be distributed for trial purposes by Wisconsin Horticultural Society as has been done during the past three years.

Well over 3000 horticulturists—from Maine to Idaho—are now co-operating in testing this strain of hardy English walnuts. So far reports are encouraging. Most of the co-operators obtained germination of from 60 to 80 per cent from the seed sent out. Wherever seeds failed to grow, replacements are being made by the society.

Readers of AMERICAN FRUIT GROWER who wish to try this strain of hardy English walnuts should write Wisconsin Horticultural Society, 1532 University Avenue, Madison.—H. J. RAHMLow, Sec'y, Madison.

MARYLAND—Discussions at 40th annual meeting of Maryland State Horticultural Society recently held in Baltimore brought out these major points:

Spreaders and stickers in sprays should be (Continued on page 19)

MARCH, 1938

Before the Blossoms



"BLACK LEAF 40" Effective for Aphis, Leafhopper, Red-Bug, Bud-Moth and Similar Insects

"BLACK LEAF 40" is outstanding as a destroyer of aphis ... used with the delayed dormant spray it is effective and costs are kept down.

When the ground has settled and buds are swelling, scab protection is required. This is the best time to kill aphis and bud-moth, using "BLACK LEAF 40."

"BLACK LEAF 40" Used with Lime-Sulphur and Lead Arsenate Gives Maximum Control of Orchard Pests

The experience of thousands of fruit growers has proved that one delayed dormant combination spray of "BLACK LEAF 40," Lead Arsenate and Lime-Sulphur controls rose aphis, bud moth, San Jose scale, scab and other destructive insect pests.

Look for the Leaf on the Package

3825

**Black
Leaf
40**

TOBACCO BY-PRODUCTS AND CHEMICAL CORP. INCORPORATED

LOUISVILLE

KENTUCKY

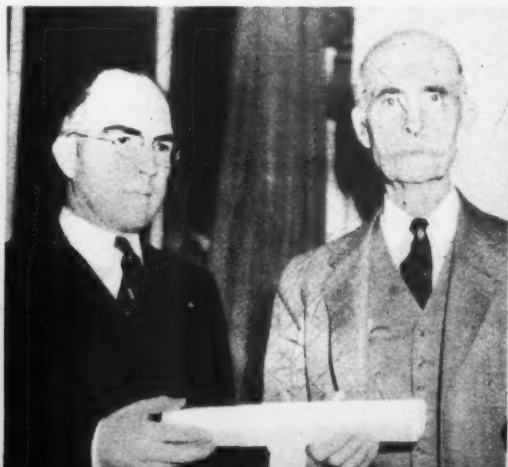
CAMERA CLOSEUPS *at the Conventions...*



Above—Enthusiasts at American Pomological Society convention in Springfield, Mo. Left to right, Dr. A. E. Murneek, University of Missouri; J. C. Ellston, Exeter, Mo.; W. B. Baughman, National Apple Institute treasurer, New Concord, Ohio, and H. L. Lantz, Iowa State College, secretary of the APS. Above, right, Frank Farnsworth congratulates Harry Lutz, right, new Ohio Horticultural Society president, as Ralph Varian, newly elected vice-president, looks on. Right, New York society secretary, Roy P. McPherson, center, Leo Gross, LeRoy, left, and F. W. Cornwall, Pultneyville, snapped while lunching during the Rochester meeting.



Right—Busy conversationalists at the Michigan meeting are, left to right, L. G. Morrill, St. Claire; S. A. Greene, Hillsdale; and Percy Anderson, Fremont. Below, left—Proud recipient of an Ohio Master Farmer award is fruit grower Howard Scarff, New Carlisle, left, presentation of medal being made by L. L. Rummell, Columbus. Below, center—Only Award of Merit presented this year by the Michigan society went to E. C. Reid, right, of Allegan, by way of Stanley Johnston, superintendent of the South Haven Experiment Station. Mr. Reid was secretary of the Michigan society from 1888 to 1900. Below, right—Ohio society members Ross Sims, Groveport, left, and Alton Lynd, Pataskia, examine some new raspberry plants.



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STATE NEWS

(Continued from page 16)

used properly or they may cause spray to spread too much or stick on too tightly. Peaches brushed at packing time should be dusted by use of sulphur in the brush machine. In scale control, best results are had by removing loose bark from tree trunks before spraying. Lime-sulphur has a deterrent effect on summer broods of San Jose scale when used as a dormant spray. The new diniro spray is an effective ovicide in aphid control and may supplant tar oil.

Probably most serious problem facing the future of the apple industry is the flood of poor apples that glut the early market. Growers realize it is in their hands to correct this situation. In fact, the future of the industry is tied up with general improvement of the product, increasing of apple uses, more efficient production, and removal of marginal trees, according to opinions expressed by growers in the various meetings. Marginal trees are those of unsuitable variety, of poor vigor or on poor soils, and there are plenty of trees in Maryland that will be removed, this year, mainly on account of variety.—A. F. VIERHELLER, Sec'y, College Park.

NEW YORK—There is a reawakening of interest in stone fruits in western New York this season. Prices for sour cherries were rather good last year and growers have responded by increased plantings. Likewise, the prune-type plums have seemed to bring good prices, and early varieties of peaches have commanded premiums.

Just how far this swing will go is one of the questions, and there is always the danger that it will go too far and be overdone. Farm bureaus throughout western New York have been reacting to the situation and have been conducting Stone Fruit Schools for the first time in several years where apples have previously been the main topic.

Out-of-State speaker for the county-wide spring meetings of the Farm Bureau in western New York fruit counties is Dr. George F. Potter of the University of New Hampshire.—H. B. TUKEY, Geneva.

VERMONT—"Examine your soil for its physical properties, depth of rootage, moisture-holding properties, and adaptability to orchard purposes," Vermont growers were recently urged by Dr. L. B. Batjer of the U. S. D. A. Horticultural Field Station located at Beltsville, Md. Dr. Batjer presented his talk on orchard management in relation to water and nutrition at the Vermont Horticultural Society annual meet and fruit show in Burlington.

In stressing the importance of water, Dr. Batjer cited an instance where a 25-year-old tree "drank" one pound of water per minute. This would total about 6000 gallons per acre per day. One-third of the water is used in growth of the tree, one-third is lost through transpiration, and one-third is used for fruit development.

Application of large amounts of nitrogen two or three weeks before blossoming time and within three or four feet of the trunks of trees was recommended by Dr. Batjer. He also suggested using a 4-12-4 fertilizer for cover crops, at the rate of four pounds per acre.—M. B. CUMMINGS, Sec'y, Burlington.

MAINE—Twenty-two certificates of membership in the 90 Per Cent Clean Apple Club were awarded on the basis of the 1937 crop—quite an achievement in such a scab-favoring season—during Maine Pomological Society annual meet in Lewiston. Membership roll was topped by Arthur Blanchard, Cumberland Center, with a score of 98.6 on Golden Delicious apples. Second high score, 98.5 per cent, was that of Mrs. Blanche Hardy of Holden.

Officers elected: R. H. Lovejoy of Sanford, president, and E. L. White of Bowdoinham, secretary. A one-day meeting is being sponsored by the Society at Orono, March 31, as part of Farm and Home Week.—J. H. WARING, Orono.

MARCH, 1938

Choose Transportation THAT "FITS"

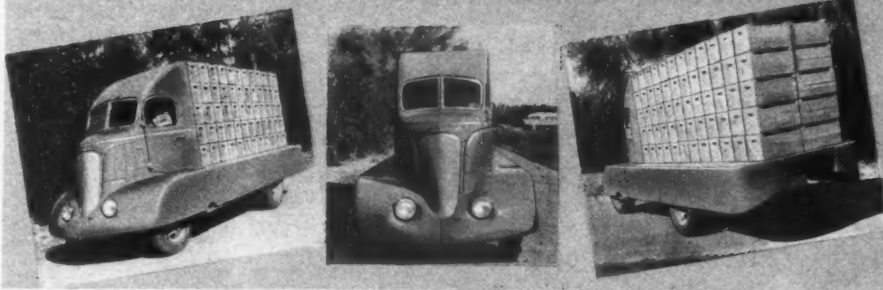


Both conventional and cab-over-engine GMCs are widely used in grove cultivation and harvest. Both standard and special bodies are profitably employed. GMC acceptance in citrus farming results not alone from low first investment and known operating economy, but also from a wide choice in chassis (½ to 15 tons)! Go to your GMC dealer. He will show you how to "fit" GMC to your every job.

Our own Y. M. A. C. Time Payment Plan assures you of lowest available rates

GMC

SPECIAL TRUCKS, TOO



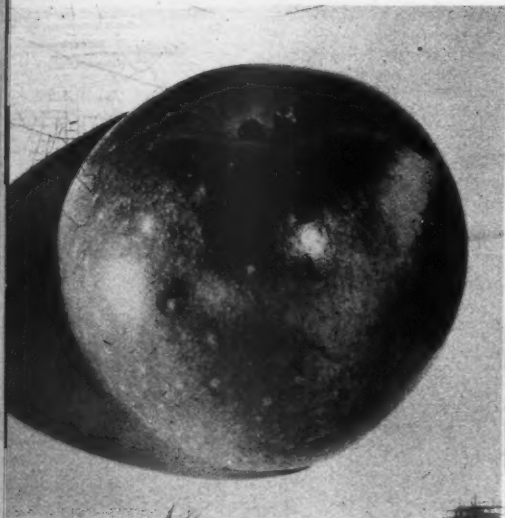
This adapted GMC with dual performance rear axle (for heavy pulling) "fits" between trees without injuring fruit! It has numerous other advantages.

GENERAL MOTORS TRUCKS & TRAILERS

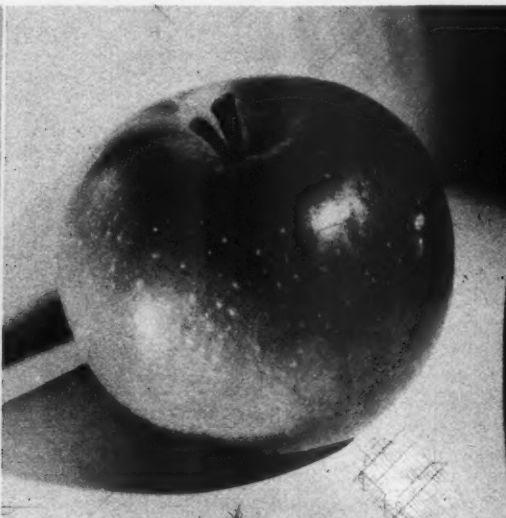
GENERAL MOTORS TRUCK & COACH
DIVISION OF

YELLOW TRUCK & COACH MANUFACTURING COMPANY, PONTIAC, MICHIGAN
AMERICAN FRUIT GROWER

Spray for



OHIO STAYMAN



MICHIGAN BALDWIN

FINE COLOR

The "eyes" have it when it is a question of buying or selling apples. Appearance counts—size, shape, COLOR and FINISH determine whether or not you get a PROFIT PRICE. That is why practical, money-making growers everywhere have changed over to Sherwin-Williams DRY LIME SULFUR with SULFIX SULFUR-WETTABLE—the Safety First Summer Spray.

With this new S-W combination growers can SPRAY for SALES APPEAL. This spray combination assures A-Grade apples of FINE COLOR and FINE FINISH because it guards against scab, against russetting, but does not injure foliage.

What is the secret? Here it is—

THE DRYING FILM OF LIME SULFUR HOLDS THE PARTICLES OF SULFIX SULFUR IN A UNIFORM, HEAVY COATING THAT IS NON-TOXIC TO FRUIT AND FOLIAGE BUT EXTREMELY PROTECTIVE AGAINST SCAB.

Because in this new S-W combination Dry Lime Sulfur will WET Sulfix Sulfur quickly, leading growers now use it exclusively instead of gambling with old style, expensive and uncertain wettable sulfur with liquid lime sulfur. These growers in their testimonials join us in recommending this new combination as the MOST EFFECTIVE, SAFE and ECONOMICAL of SUMMER SPRAYS.

DRY WETTABLE

WRITE FOR FREE

THE SHERWIN WILLIAMS

Insect Department

101 Prospect Avenue, Cleveland, Ohio

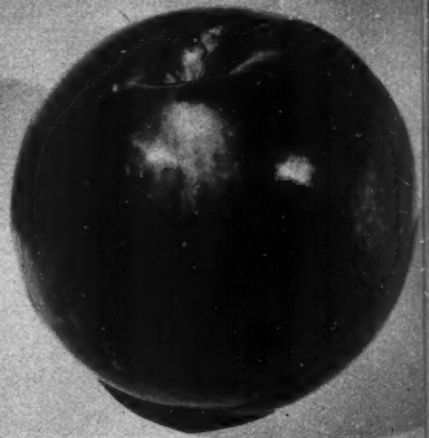
SHERWIN-WILLIAMS

SPRAY AND DUST MATERIALS

Sales Appeal



NEW YORK SPY



PENNSYLVANIA McINTOSH

FINE FINISH

ILLINOIS STARKING

The FINE FINISH of the apples illustrated are the result of using S-W Dry Lime Sulfur with Sulfix Sulfur-Wettable.

You, too, can spray with the certainty of producing apples of FINE COLOR—FINE FINISH—AND SALES APPEAL by simply switching over to the use of Sherwin-Williams Dry Lime Sulfur with S-W Sulfix Sulfur-WETTABLE.

You will find, as every other user has, that this new S-W Summer Spray Combination produces BETTER APPEARING—BETTER SELLING APPLES because it PROTECTS against SCAB; ELIMINATES risk of RUSSETING, which always threatens when liquid lime sulfur is used; GUARDS against FOLIAGE INJURY. DRY LIME SULFUR is used as the wetting agent, which in itself is a most effective fungicide. It SPREADS uniformly and STICKS to fruit and foliage.

THE SHERWIN-WILLIAMS CO. DRY LIME SULFUR—SULFIX SULFUR 1938 SPRAYING SCHEDULE

No Scab No Russet No Foliage Injury

Pre-Pink and Pink	3 lbs. Dry Lime Sulfur 5 lbs. SULFIX Sulfur
Calyx	2 lbs. Dry Lime Sulfur 4 lbs. SULFIX Sulfur
Additional Scab Sprays	1 lb. Dry Lime Sulfur 4 lbs. SULFIX Sulfur

THESE DILUTIONS ARE PER 100 GALLONS OF WATER

1 part Dry Lime Sulfur will make wettable up to 4 parts of SULFIX Sulfur.

Add 3 lbs. of Sherwin-Williams Arsenate of Lead to each 100 gallons of spray when necessary. When using arsenate of lead add 4 lbs. of hydrated lime to 100 gallons.

WETTABLE

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- Interchangeable steel or rubber wheels.
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A. B. FARQUHAR CO., Limited, York, Pa.

Largest Eastern Implement Manufacturers

POLLINATION

(Continued from page 7)

Stark, Stayman, Winesap, Winter Banana.

Partly self-fruitful: Baldwin, Ben Davis, Duchess, Early Harvest, Gano, Golden Delicious, Grimes, Jonathan, Maiden Blush, McIntosh, Rome, Wealthy, Yellow Transparent, York.

The four members of the Winesap group, namely, Arkansas Black, Arkansas (Black Twig), Stayman, and Winesap, are especially conspicuous in this respect. They are unfruitful, as a rule, when pollinated with their own pollen. Moreover, they will not pollinate each other effectively and hence should not be planted without the presence of other varieties as pollinizers. Members of the Winesap group produce largely defective pollen and are very poor pollinizers for any variety, including, of course, themselves. But when interplanted with other desirable sorts, they usually yield good crops.

The partly self-fruitful varieties will not yield well when self-pollinated, under best conditions not giving more than 25 to 50 per cent of a full crop. It is very desirable, therefore, to interplant at least two and preferably more of these varieties. This will assure greater benefit from cross-pollination.

The grower frequently wishes to know what varieties are particularly good pollinizers. The following varieties are outstanding as producers of large amounts of potent pollen: Delicious, Jonathan, Ben Davis, Golden Delicious, Wealthy, Grimes, York, McIntosh, Yellow Transparent, and several others. They will not only pollinate each other effectively, but also can be safely interplanted with practically any variety for this purpose.

Of the above list the first four varieties seem to excel the others tested by us as pollinizers. One must keep in mind the biennial bearing habit of some of these sorts, especially York, Wealthy, and Yellow Transparent. They form, as a rule, too few blossoms in the "off year" to be of any great value for pollination.

Evidence seems to point to the various red bud sports as having the same pollination and fruit setting characteristics as the parents from which they came. In this respect the Gano and Black Ben are similar to Ben Davis, Starking and Richard to Delicious, Gallia Beauty and Red Rome to Rome, Staymared and Blaxtayman to Stayman. This may be true also of most of the other red strains.

All things considered, in setting out an orchard it is much more desirable and certainly safer to plant

four to six varieties than two or three. An example may illustrate this suggestion. If the varieties selected for planting are Stayman, Delicious, Jonathan, and Golden Delicious, then two rows of Stayman should be flanked on either side by two or four rows of Jonathan and Golden Delicious, followed by two rows of Delicious and so on. The main idea in such a planting plan is to keep the highly self-unfruitful varieties, such as Stayman and Delicious, right next to good pollinizers, in this case Golden Delicious and Jonathan.

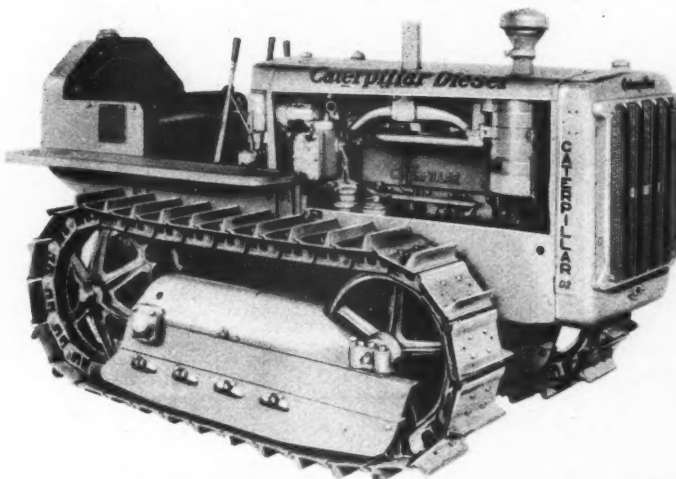
Although several other insects frequently visit apple blossoms, the domesticated honeybee is the only insect that can be relied upon to bring about effective pollination. This is particularly so when the weather is cold and rainy during the blooming period, or when it is excessively hot and the flowers open and wilt in a few days. It has been demonstrated in a convincing way in numerous instances that it pays to keep bees in the orchard. This is especially true in localities where almost all of the ground has been put under cultivation with very little waste land left to harbor wild insects.

It has been estimated that a single apple flower may produce 70,000 to 100,000 pollen grains and that as many as 50,000 to 75,000 grains may be carried by a single bee on its body. Since only 10 functional pollen grains are necessary to bring about complete fertilization of an apple flower, one can readily see the great possibility of sufficient spread of pollen by the honeybee.

If the trees are young, one good hive for every three to five acres is quite sufficient. Orchards in full bearing require a minimum of one colony per acre. It is advisable to distribute the hives throughout the orchard. Their proper scattering among the trees seems to be an essential feature in pollination. It will assure the maximum number of visits by the bees to flowers.

With ample pollinizers, plenty of bees, and fine weather, there is some danger of overpollination of apple trees, especially when, for one reason or another, they are in a devitalized state. One may have too much of a good thing. The result will be overbearing with its consequent evils, such as fruit of small size and poor color, breakage of limbs and the establishment of biennial bearing. But all things considered, it is much safer to provide facilities for a maximum than a minimum pollen distribution. The size of the crop can be regulated quite effectively by pruning and fruit thinning. There is no known method that will put apples on the tree when the flowers are not properly pollinated.

The Diesel D2 is priced at only \$300 more than the spark-ignition Twenty-Two. (F. O. B. Peoria, Ill.)



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DIESEL D2

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NOW, this company builds both Diesel and spark-ignition engine powered tractors in the 3-4 plow size—the Diesel D2 and the famous Twenty-Two!

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Under average conditions, the Diesel D2's 4-cylinder engine uses only 1 1/4 gallons of Diesel fuel per hour—pulling loads on which the Twenty-Two burns 2 gallons of distillate, tractor fuels or gasoline per hour. Savings of 60 per cent to 80 per cent on fuel cost may be confidently expected of the Diesel D2—just like the 4 larger sizes of "Caterpillar" Diesel Tractors.

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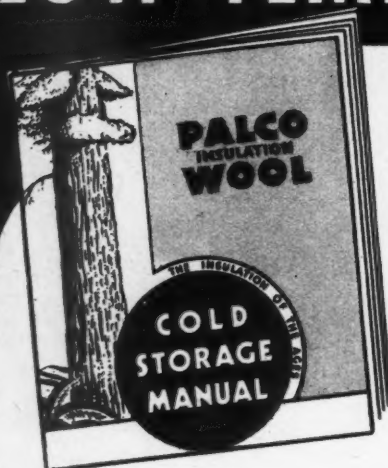
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PAGE 24

AMERICAN FRUIT GROWER

GRAPE GROWING

(Continued from page 13)

production which has changed but little in principle. Many different formulas that vary the amounts of copper sulphate (blue stone) and lime have been used since Bordeaux was first applied as a spray, but the principle of having copper sulphate and lime combined in water as a spray to control grape diseases has stood the test of time.

The greatest change has taken place in the methods used to apply spray material to the vine. From the use of a brush or broom for applying Bordeaux mixture, as practiced by A. Millardet in France about 1885, to the large power spray outfits now operated in North American vineyards is a great stride.

The grape disease and insect pests have changed but little. Let us here list most of these pests. First we will take the disease pests controlled by thorough spraying with Bordeaux mixture: black-rot, downy mildew, anthracnose and ripe-rot. Second, the chewing type of insect pests now controlled by the use of arsenate of lead applied in combination with Bordeaux mixture: the grape berry moth, the grape root-worm (the beetles of which feed upon the foliage), the grape vine flea-beetle, the common rose-chaffer (rose-bug as known by some growers), the grape leaf-folder, the grape curculio, the grape vine looper, the grape plum moth, and in some sections the Japanese beetle. Third comes the sucking type of insect now controlled by the use of 40 per cent nicotine sulphate solution used in combination with Bordeaux and arsenate of lead sprays: the grape leaf-hopper.

All of these pests will not likely be found doing damage in all vineyards or all in the same year, and the Japanese beetle is a special problem of control in the infested districts.

Some interesting grower facts are presented in the following publications: "Growing and Marketing Grapes in Erie County, Pa.," published as Bulletin No. 260 of the Pennsylvania State College and Agricultural Experiment Station in cooperation with the U.S.D.A., and "Practices Followed by Grape Growers in Fertilizing, Tilling, Spraying and Dusting in New York, Pennsylvania, Michigan and Arkansas Vineyards," published as a preliminary report of the U. S. Bureau of Agricultural Economics.

The following statements are taken from these publications:

"About half of the growers used the umbrella system of training.

(Continued on page 28)

MARCH, 1930

ALTERNATE BEARING

(Continued from page 9)

growth, are good indicators of what we may expect in fruitfulness of a tree. Both excessive growth and very poor growth conditions result in poor fruitfulness.

A happy medium of growth condition, usually described as vigorous, has been associated with maximum fruitfulness. As a consequence, every grower tries to maintain this vigorous condition and thus the greatest fruit bearing of his trees. Unfortunately, such a procedure may lead to excess cropping in any given year which would be one way of starting the alternate bearing habit.

Conversely, the elimination of a crop by winter freeze of fruit buds or spring frost in killing all blossoms, will start the same cycle of heavy crops alternating with light or no crops.

Varieties, of course, differ in the extent of response to such conditions, but *all varieties can be upset*, and changed from annual bearing to biennial bearing. This difference in tendency in varieties may be classed as variation of inherited character, or may simply be termed as variation in growth and reproductive responses to environmental conditions.

What can a grower do to prevent such undesirable responses? Considering tree growth alone, it may sound paradoxical to say that the maintenance of a vigorous growth condition by use of fertilizers, cover crops, mulching, irrigation, and other means is of prime importance, unless one sacrifices yields and is willing to accept small annual crops which usually accompany poor growth conditions.

Good, vigorous growth also means the development of large leaf area, which must be regarded as the main source of food materials for growth of tree, fruit, and formation of fruit buds. The question becomes one of distribution of these food materials in a socialistic manner so that all parts of the tree will be furnished with sufficient amounts.

A large crop of blossoms and the subsequent large set of fruit (some of which falls off) necessarily must require large quantities of food materials manufactured by the leaves. Many fruits fall off at June drop because of the heavy competition for food materials. Unfortunately, the formation of blossom buds for the next year's crop enters into this competition for food materials, largely during the months of June and July.

With moderate blossoming and moderate set of fruit, distribution of food materials apparently is suffi-

(Continued on page 26)



A NEW 122-inch wheelbase unit has been added to the Ford line of trucks and commercial cars—to bring Ford V-8 economy to loads in the one-ton range. It is available with either the 60 or 85 hp. V-8 engine and comes in three different body types—Stake, Panel and Express.

For contract hauling, the new Ford V-8 134-inch and 157-inch wheelbase trucks offer maximum performance and overall economy. These units are powered with the 85-hp. engine, now in its seventh successful year. Brakes are larger, quicker stopping. Steering is easier. Construction is stronger in vital parts. 7.50-20 dual tire and wheel equipment is available at slight extra cost.

For loads lighter than those in the one-ton range, the new 112-inch wheelbase commercial cars—with a choice of either the 85 or 60 hp. V-8 engine—do the job with unusual economy.

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Hardie sprayers cost less to own and operate any way you figure it—number of gallons pumped per year or period of years, number of trees sprayed, number of acres sprayed with a given pump size. Operating cost records of hundreds and hundreds of Hardie pumps establish the fact.

Advanced design assures the Hardie owner of the most modern sprayer built. This means unusually slow depreciation. Almost limitless wear is provided by slow turning, heavy, forged steel crankshafts in large, replaceable bearings, se-

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Hardie gives every grower big sprayer value. The smaller Hardies are built just like the big Hardies and perform with equal efficiency and economy within their ratings. Both large and small growers get the best there is when they buy a Hardie.

Write for the Hardie 1938 catalog—64 pages packed full of sprayer information that every grower should have, showing over 40 sizes and styles delivering from



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PAGE 26

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AMERICAN FRUIT GROWER

ALTERNATE BEARING

(Continued from page 25)

cient to take care of everything, including blossom buds for next year. With heavy blossoming and heavy set, the supply of food materials may be insufficient to take care of all the tree's activities, hence blossom bud formation does not occur, which results in no crop the following season.

If trees are blossoming moderately and fruiting moderately *annual cropping* results, which can be maintained usually by maintenance of growth conditions as previously stated. If trees blossom heavily and set a large crop, *alternate bearing* usually results.

A logical procedure would seem to be to thin off fruits to approximate moderate cropping whenever such a heavy set occurs. However, the solution is not so simple, as shown by the thinning experiments of this character.

Heavy blossoming and heavy set make a heavy drain on food materials, so that thinning to a moderate crop does not balance these conditions. More recent experiments show that a greater thinning of fruits, usually 80 per cent removal, is necessary to offset the blossom and fruit demands and permit distribution of food materials for formation of blossom buds. Such fruit removal must be done early (within 35 days after bloom) to be effective and trees must be in a vigorous condition with sufficient healthy leaf area per fruit.

Occasionally alternate bearing trees may have partial removal of blossoms by spring frost which, in effect, results in moderate blossoming. When such frost effects have occurred, moderate cropping was started and annual crops were produced in subsequent years. Similar thinning of blossoms, by hand, or by chemicals has not been found practicable as yet, but requires at least 75 per cent removal of blossoms.

On the other hand, annual bearing trees may form a heavy crop of blossom buds due to a frost effect on the present season's crop, or due to favorable weather conditions during June and July. Such trees are apt to start alternation in bearing unless heavy fruit thinning is resorted to.

Omission of nitrogen fertilizer until after blossoming of such trees also may help by decreasing set of fruit. Too heavy pruning of McIntosh in Wisconsin is considered by Roberts as responsible for increased set and alternate bearing of McIntosh in that State. In case of light blossom bud formation, every effort should be made to insure set by use of nitrogen fertilizers, bees, etc.

In a recent fruit growers' conference in Washington, D. C., Dr. E. C. Auchter, chief of the Bureau of

MARCH, 1938

Plant Industry, U. S. D. A., stated that new varieties which tend to be annual should be developed to replace our present bad offenders. If all varieties were annual producers, the apple crop would be more stable from year to year and market supplies more predictable.

With our present alternate bearing varieties, pending such removal in favor of other varieties, the method of heavy, early thinning might seem too expensive, both in labor and in partial loss of crop, but such thinning would be done only in the initial year, the cost of which should be made up the following year, especially if the following crop comes in a year of general light cropping for the country as a whole.

However, with the variety York Imperial, which is sold to a great extent to the export trade, the larger sized fruits borne with moderate cropping of annual Yorks did not find a ready market. The grower would be better off to have York trees strictly alternating, and, if possible, have half of his trees bearing one year and half the next year.

In addition to apple varieties, there are instances of alternate cropping of peaches, apricots, and other fruits. The same principles of correction apply to these fruits.

Conclusions

Alternate bearing of fruit trees can be changed to annual bearing by practical means at the disposal of the grower. Annual bearing can be maintained by the same means. Such orchard practices that will maintain a vigorous growth condition and healthy foliage is one requirement. Adjusting the set of fruit, if necessary, by early annual fruit thinning, or in case of heavy blossoming and heavy set, by heavy early fruit thinning, is another requirement. Special practices such as detailed pruning in removing weak wood, fall application of nitrogen, or withholding nitrogen in case of heavy bloom, mulching to conserve moisture, and irrigation—all contribute in adjusting conditions to meet requirements.

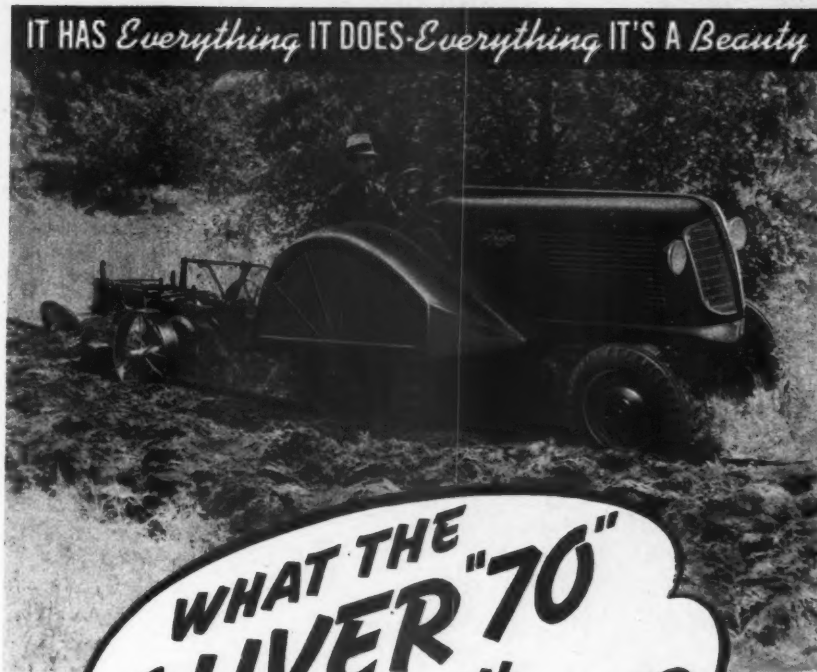
COLD STORAGE HOLDINGS

Cold storage holdings of apples on February 1, according to the monthly report of the U.S.D.A., were 312,000 barrels, 10,938,000 western boxes, 14,202,000 bushels, including baskets, eastern boxes and crates. In 1937 on the same date there were 176,000 barrels in storage, 9,201,000 western boxes, and 7,631,000 bushels, including baskets, eastern boxes and crates.

Stocks of Bartlett pears totaled 19,000 packed boxes compared with 29,000 on the same date last year, 3000 loose boxes as against 6000 in 1937, with all other varieties 620,000 boxes and 21,000 bushel baskets as compared with 379,000 boxes and 22,000 bushel baskets a year ago.

MARCH, 1938

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You do use less fuel to get more power from the Oliver Orchard "70" than any other tractor in the 2-plow class today. The "70" is built that way and does its work that way.

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Make your own test. Drive an Orchard "70" and see how much work you do in an hour. See how little fuel and oil it uses when you drive it.

Think of the best power job you ever did with a tractor in your orchard. Behind the wheel of this easy-riding, streamlined beauty—the Oliver "70" of '38—you'll find out what a real job is like.

Try it any old way—plow, disc, cultivate, mow. Use it with a power take-off sprayer or hauling about the orchard. Try the high compression "70" HC—or the "70" KD for kerosene or distillate. See if you don't say it's the liveliest, sweetest, easiest, "goingest" bundle of orchard power you ever handled.

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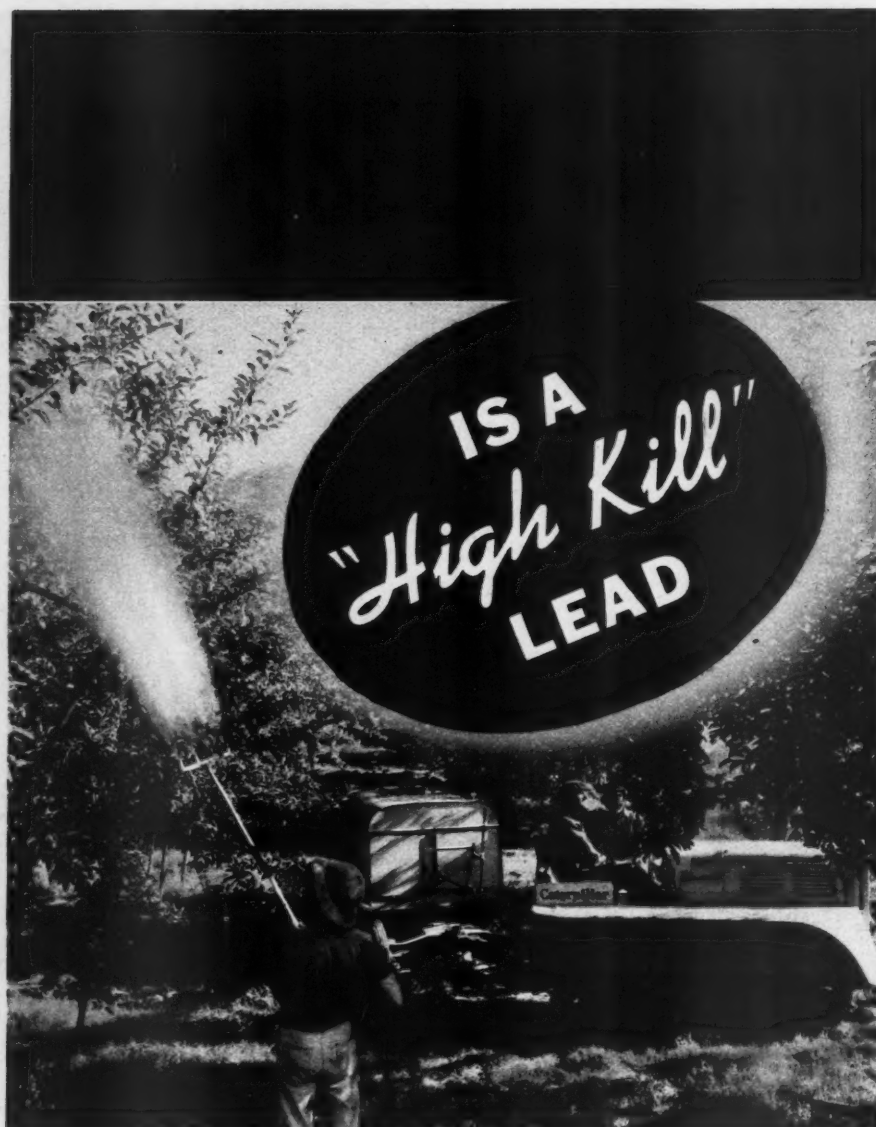
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AMERICAN FARMER

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PAGE 27



GRASSELLI Arsenate of Lead is a high deposit lead. It is compatible with summer oils and when used together, the combination acts both as an insecticide and an ovicide—offering additional control of later codling moth broods. GRASSELLI Arsenate of Lead remains well in suspension. It works well through long lines and nozzles without clogging and can be removed by ordinary washing methods.

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DUTOX fluorine insecticide	"Fluxit" Spreader	"Black Leaf 40"
	Dormant and Summer Oils	Copper Compound-A

GRAPE GROWING

(Continued from page 24)

This system and the Chautauqua arm required less time and cost less than did the Kniffen system. The yields were about the same for each of the systems." You will note that nothing is said about growers not pruning or training. This cultural practice is well established.

"Only seven per cent of the growers did not use fertilizers, manure or cover crops." You will note that the feeding of the vine is also an established practice.

"About one-third of the Michigan vineyards studied were sprayed or dusted twice, and one-third three times during the season. Vineyards sprayed three or more times produced more than did vineyards sprayed less than three times, but on the average, the vineyards sprayed the greatest number of times were also cared for more intensively in other ways."

"The extent of diseases and insects as well as the effectiveness of spraying, varies from year to year depending somewhat upon weather conditions. Sprays may be considered as efficient weapons with which to reduce or eliminate damage from diseases and insects. Some growers consider an unsprayed vineyard as unnecessary a risk as an uninsured building."

The progressive grower is fully aware that spraying is his insurance against a cull crop. A grower would find it difficult to insure his grape crop against hail damage after the storm had hit his vineyard. This condition is more or less true in the case of spray pest insurance, so a complete spray program for the grape would be based upon the principle of keeping the vine, the foliage, and the fruit insured against pest damage by a spray covering.

In a similar position to that of hundreds of fruit growers throughout the country, Sol H. Esarey, Indiana grower, writes AMERICAN FRUIT GROWER Reader Service Bureau:

"I am interested in a cold storage plant for my orchard. I have about 160 acres just coming into bearing and eventually will need space for 30,000 to 50,000 bushels. Harvest temperatures run from 60 to 70 degrees. Apples would need to be kept 30 to 100 days. Would be pleased to have any suggestions."

AMERICAN FRUIT GROWER Reader Service Bureau is ready to assist all subscribers who are planning cold storages. Address inquiries to Reader Service Bureau, AMERICAN FRUIT GROWER, 1370 Ontario St., Cleveland, Ohio.

GRAPE DISEASE CONTROL

By A. L. PIERSTORFF
Ohio State University

BLACK-ROT and downy mildew were uncommonly well distributed throughout the eastern grape growing region in 1937. Anthracnose and powdery mildew were also common, but did not exert the destructive powers shown by the former two diseases. Vineyards so located that the lake breezes were able to dry the foliage quickly after rains were not troubled seriously by diseases. However, some growers in the Great Lakes grape growing region did have difficulty and did not recognize black-rot and downy mildew in their early stages and permitted the diseases to become severe before sprays were applied for their control. In other districts some distance from the lake most growers recognized black-rot, but could not control it with their spray schedules, which were designed for a normal season.

The year 1937 was far from normal as far as prevalence of diseases was concerned. In fact, more diseases were present than during any time in the last decade. Downy mildew was more abundant on the foliage than on the fruit and in the end probably did not do nearly as much harm to the grape crop as black-rot.

Conidia of the black-rot fungus exude about the time the buds are in the delayed dormant stage. They emerge in a continuous chain, appearing, when viewed under a microscope, much like hot dogs emerging from a sausage machine. These spores are splashed and washed about by the rains and cause the early infections.

A 6-8-100 Bordeaux mixture plus fish oil one pint applied at the delayed dormant period and again when the young shoots are eight to 10 inches long will start the grower out on the correct procedure for controlling black-rot and downy mildew. Of course, additional sprays will be necessary at petal fall and again in about 10 days. The concentration of the Bordeaux mixture should be reduced in the latter two sprays. These four sprays generally will give control, and later sprays, which may soil the fruit, need not be applied. In the event control has not been secured by these sprays, one of the insoluble coppers may be used in the latter part of the season. This program will also control anthracnose and powdery mildew sufficiently well to permit the grower to harvest a good crop of grapes.

MARCH, 1938



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SWEET CHERRIES

(Continued from page 11)

wired in an upright position on the south and west so as to shade the trunks in winter, have proved effective in preventing sunscald injury. Spring frosts cause frequent losses to the early blossoming sweet cherry trees. Because of the need for cross-pollination and setting of a high proportion of the blossoms to secure heavy yields, rainy or windy weather at blossoming time results in greater losses with sweet cherries than with most fruits. Rains at harvest time are the bane of sweet cherry growers of western Oregon, and all too frequently cause damage in eastern Oregon, Washington, and Idaho, stimulating a search for non-cracking sweet cherries of quality.

While several new varieties of sweet cherries are promising for trial, none appears likely to replace the standard ones in the commercial orchards of the West. The following varieties deserve consideration in planning a new planting:

Lambert is now the leading black shipping cherry in the northwest and intermountain states, and is becoming more popular than Bing because of its hardier, healthier tree, and later ripening season which makes it less susceptible to damage from cracking by rains at harvest.

Bing is the leading late shipping cherry in California, and is widely grown for shipping in the Northwest. Like Lambert, the fruits are very large, reddish-purple, firm, crisp, sweet, and of excellent shipping and dessert quality. Bing is the nearest approach to a perfect market cherry, yet tenderness to cold, lack of vitality of the trees, and susceptibility to cracking have made it less profitable than Lambert except in ideal cherry climates.

Napoleon is the only white-fleshed cherry of commercial importance, being extensively grown for canning and maraschino making. It is not popular for shipping because of bruising and discoloration. Napoleon is more vigorous and productive than Bing and Lambert, but is more often damaged by cracking and is not as hardy in tree as Lambert. The fruits are large, firm, blushed, and of high quality, being more sprightly in flavor than Bing and Lambert.

Lambert, Bing, and Napoleon are intersterile and will not pollinize each other satisfactorily, hence one or more of the following varieties should be planted with these three to insure pollination.

Windsor is a leading black sweet cherry in the East because of its hardy, productive tree and resistance to cracking and brown rot. In western districts it is not liked by

shippers because of its lack of size and light colored, moderately firm flesh. Tests at the Utah and Ohio experiment stations show Windsor to be an excellent pollinizer.

Black Tartarian is the leading early shipping variety grown in California, and is popular as a pollinizer. There are several distinct strains of this variety, some of which are poor pollinizers, while others are unproductive. In the late shipping sections, Tartarian is less valuable than Windsor or Deacon because it does not ship or can well and cannot compete on the markets with the more popular Bing cherries from California.

Schmidt (Schmidt Bigarreau, Black Orb). A splendid large, black, firm cherry rather resistant to cracking, in season with or just before Bing. Schmidt is a leading variety with Windsor in eastern sweet cherry plantings. In the West, however, this otherwise useful shipping variety is seldom productive, blossoming heavily but only occasionally bearing enough fruit to be profitable. The trees, while extremely vigorous, suffer from die-back in the tops, and the fruit is not equal in flavor to Bing or Lambert. Tests at the Utah station show this variety to be an excellent pollinizer.

Black Republican (Black Oregon, Lewelling). There are several distinct strains or varieties of similar type grown under these names. They are late ripening, firm-fleshed black cherries of medium size which have been used extensively in the Northwest as pollinizers for Lambert, Bing, and Napoleon. In the dry interior sections the fruit is often small and has a bitter flavor.

Chapman, Early Purple, and Burbank are extra early varieties with small, black, soft fruits which are of importance only in California. Early Rivers and Seneca are two new varieties of this type which appear promising to precede Black Tartarian. Early Rivers is an English cherry, while Seneca is a recent introduction from the New York Experiment Station, where it was raised from a stone of Early Purple Guigne. It is vigorous, productive, and two weeks earlier than Tartarian, but smaller than that variety.

Promising new sweet cherries of the black shipping type are Deacon, Giant Geante d' Hedelfingen, and Gil Peck.

Deacon is a black cherry of the Bing type which is being planted as a pollinizer in Washington, Idaho, and British Columbia. Tests by the Washington Experiment Station show it to be an excellent pollinizer for the commercial varieties. While not usually quite as large or firm as Bing, the fruit of Deacon is acceptable for shipping at somewhat lower

(Continued on page 32)

MARCH, 1938

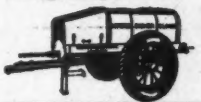
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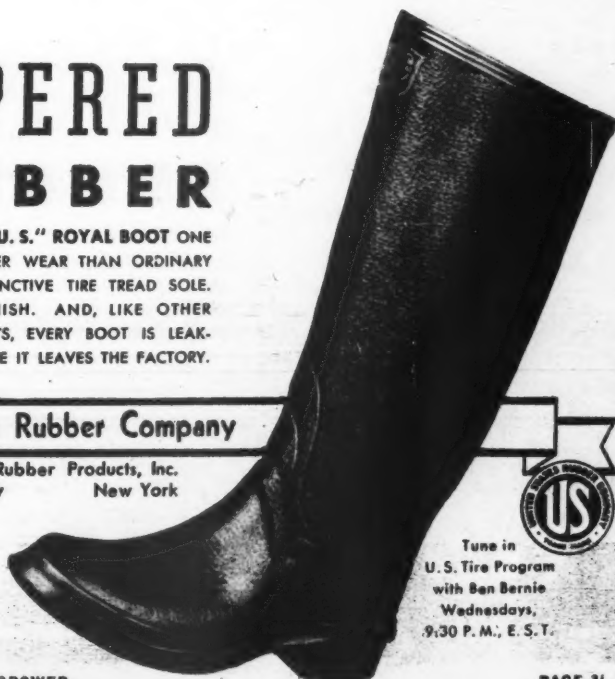
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PAGE 31

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AMERICAN FRUIT GROWER

SWEET CHERRIES

(Continued from page 31)

prices and is said to be excellent for home canning. The trees are large, vigorous, very productive, and less subject to cracking than Bing.

Giant appears promising as a large firm-fleshed cherry in the East, but has not proved superior in the West; however, the true Giant may not have been well tested since this variety seems to have been mixed with Bing, Lambert, and other less desirable cherries and consequently is difficult to get true-to-name.

Geante d' Hedelfingen is a promising new variety of Lambert type from Europe. The fruit is large, firm, of good quality and dark color, and seems rather resistant to cracking from rains. Preliminary tests by the writer at the New York station in 1935 indicated that pollen of this variety is interfertile with Bing, Lambert, and Napoleon.

Gil Peck is a new, large, firm, black variety of good quality recently introduced by the New York station which seems worthy of extensive trial as a commercial and pollinizing cherry.

New varieties of the white-fleshed type are Victor and Emperor Francis, both of the Napoleon type and considered to be superior to the older sort in the East.

While Mazzard stocks have been traditionally considered the best for sweet cherries, there appear to be many conditions under which Mahaleb or Stockton Morello rootstocks are much superior to Mazzard. While G. H. Howe of the New York station has shown the superiority of Mazzard rootstocks on heavy, rather wet soils in New York, observations in New York, Michigan, and Utah indicate that trees on this stock are more subject to winter injury. In the drier, gravelly or sandy loam soils of Utah trees on Mahaleb are more vigorous, hardy, and longer lived than those on Mazzard.

G. L. Philp of the California station reports that sweet cherries on Stockton Morello are much longer lived than those on Mazzard and Mahaleb on wet, heavy soils in California. This Stockton Morello is a variety of the Morello sour cherry type which is propagated by suckers. Sweet cherry trees on this stock are much dwarfed and come into bearing early. The sweet cherry scions overgrow the stock. Trees on this dwarfing stock are planted closer together than those on Mazzard and Morello. Planting of trees on Mazzard and Mahaleb roots 26 to 35 feet apart is recommended to prevent crowding when trees mature.

Pollen for necessary cross-pollination in the sweet cherry orchard

may be provided by planting every third or fourth row to a pollinizing variety, or by planting a compatible variety every fourth tree in every fourth row. Another plan being used with satisfaction by some growers is to plant Bing, Lambert, or Napoleon solidly, and topwork a pollinizer such as Deacon, Windsor or Tartarian into the leader branch. In Utah, where Tartarian is used, the birds do not bother the later varieties as much as where no Tartarians are available. Where wild or tame bees are not plentiful, growers find it profitable to arrange with beekeepers to place colonies of bees in the orchard at blooming time, one hive to an acre being considered sufficient. The bees must be removed before spraying.

Sweet cherries must be planted early in the spring in northern sections with cold winters in order to secure a good stand and satisfactory growth the first year. Cherry trees do not transplant as readily as other stone fruits, hence early planting and attention to watering and cultivation are particularly important. In California, early winter planting is recommended.

In order to take advantage of the root development attained in late winter and early spring before spring planting would be possible, one Utah grower planted in November, mounded up the soil to the height of a foot to protect the trees and cut them back to the height of the mound. He secured excellent growth, but the heavy pruning involved in this low heading and subsequent removal of low branches necessary to secure a head at the desired height would probably set back the trees' development enough to offset the gain in growth made. Mulching the basin about the newly planted tree with strawy manure or other suitable mulching material is helpful in retaining moisture.

Sweet cherry trees are readily trained to the modified leader type, their handling as young trees resembling the training given apple trees. Disbudding of the newly set trees after the shoots begin growth is advisable to secure well-spaced lower branches. Heading the newly set trees from 30 to 36 inches makes possible the selection of more scaffold branches the first year. Two-year-old trees permit selection of several scaffold branches the first year, such branches being headed back to live outside buds. From five to eight well spaced scaffold branches with wide angles may well be selected, spaced not less than six inches apart.

Sweet cherry leader branches usually grow more vigorously than the side branches, and require suppressing after the scaffold branches

(Continued on page 35)



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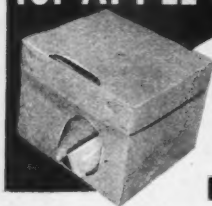
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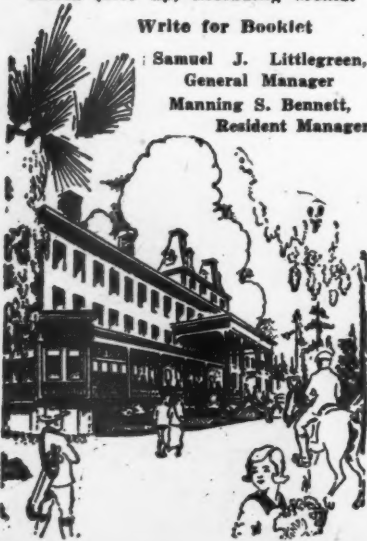
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BERRIES • (Continued from page 10)

planting, loss from winter injury, and lack of a good crop the following season are points against late summer or fall planting.

The best stands are obtained when only plants with strong, fibrous root systems are used. If plants are not set immediately upon arrival from the nursery, heel them in by planting close together in a furrow. They can then be set out in regular rows when time permits.

The roots of strawberry plants should be kept moist during planting operations. Long, straggly roots should be clipped before the plants are set, and planting holes must be large enough to hold the roots without crowding. It is advisable to water the plants after setting.

The matted row system of planting is popular. Under this method, plants are set from 14 to 20 inches apart in the row with the rows four to five feet apart. Runners are allowed to develop from the mother plants so that by the end of the season well-matted rows two to four feet in width have developed.

The double-hill system, in which plants are set three feet apart in all directions with runner plants to be spaced between the mother plants in the rows by double-hill arrangement, is rapidly gaining in favor as it results in higher yields of quality fruit.

Cultivation of the planting will be necessary to keep down weeds, but such cultivation must be shallow to avoid injury to the strawberry roots.

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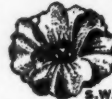
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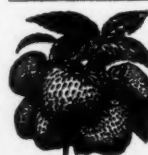
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MARCH, 1939

SWEET CHERRIES

(Continued from page 33)

are established during the third and fourth years by heading back to laterals. Where young cherries grow vigorously and reach a length growth of over 15 inches by early June, the shoots can be clipped back a few inches to cause branching, thus securing two sets of branches the same season.

Young cherry trees require protection from insects such as cherry slug, black cherry aphids, and red spider mites, also from leaf spot disease in humid regions. Slugs are easily handled with lead arsenate spray or dust, but the second brood in August and September will bear watching. Aphids are best controlled by nicotine oil, tar oil emulsions, or pyrethrum when the eggs hatch in early spring. Summer oil or wettable sulphur is useful for mite control, the sulphur also being helpful for leaf-spot. In the East, Bordeaux is used to control the leaf-spot disease. On bearing trees, lead arsenate should not be used after the cherries are half grown.

Cultivation during spring and early summer, followed by soil building cover crops, is advisable in young cherry orchards. Where growth is not adequate, applications of nitrogenous fertilizers should be tried. In arid western sections, careful irrigation to replace water withdrawn by the trees is essential in rapidly building large, productive trees. Where growth is rank, care should be taken to check vegetative growth in late August and September to avoid winter injury associated with immaturity. Cover crops and withholding irrigation water during this period is advisable.

Much of the die-back common in older bearing cherry orchards can be prevented by keeping the trees vigorous rather than allowing them to become spur-bound. Non-vigorous trees are apt to set so heavily that the size of fruit is reduced seriously, while the trees, exhausted by over-bearing, fall an easy prey to winter injury and valsa canker.

Improvement of soil management practices such as cultivation, fertilization, and irrigation should be tried first in overcoming lack of vigor. Where such improvements are not adequate, a general thinning out and heading back pruning of the less vigorous branches should be made to increase vegetative growth. Orchards kept in sod generally lack vigor as compared to those under a cultivation-cover crop system; however it is possible that a legume sod system would be satisfactory where moisture is adequate and manure or nitrogen fertilizer added in early spring.

MARCH, 1939



Above illustration shows one of the sprayers at the Price Orchard, Newark, Ohio, being made ready for spring spraying operations, an important phase of seasonal fruit farm equipment preparation.

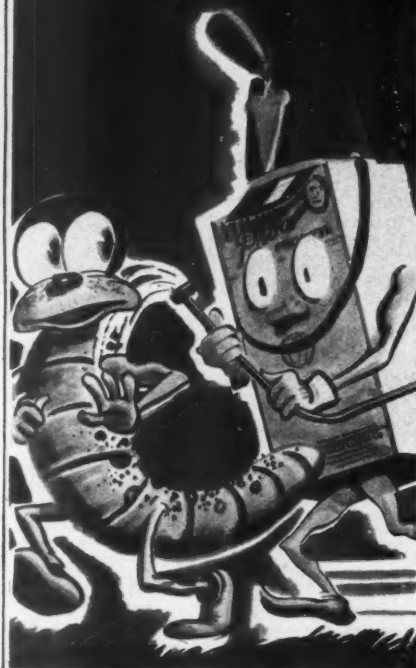
INVENTORY TIME FOR FRUIT FARMS

IT'S change-over time. Spray rigs must be prepared for spring work and that means cleaning out the radiator, filling the motor with a good oil, checking spark plugs and a thorough going-over of pump, hose and tank. Trucks and tractors also need the radiator cleaning and oil renewal to make them ready for the busy season ahead. Probably the most troublesome occurrence when trying to put an important, hurried spray on the trees or hauling fruit, fertilizer or spray chemicals by truck, is to have radiators boil. Nothing is better to remove winter accumulated sludge and sediment from radiators than Sani-Flush, which can be purchased at any grocery store. High quality oil is friction's arch enemy, especially firm-bodied oil that won't break down under constant orchard and highway operating conditions.



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AMERICAN FRUIT GROWER



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WANTED—PROMINENT ORCHARD GROWERS TO book orders for our fruit and ornamental trees. Weekly cash advances on orders. JONES NURSERY, Woodlawn, Virginia.

PAGE 36

MISCELLANEOUS

EVENTUALLY YOU'LL LIVE IN FLORIDA. KEEP in touch with its agricultural opportunities by subscrib- ing to its leading citrus and truck magazine. 50c per year; 3 years, \$1.00. FLORIDA FARM AND GROVE, Jack- sonville, Florida.

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AMERICAN FRUIT GROWER

Propagating Black Walnuts

THE propagation of walnuts by graft- ing and budding is at best somewhat dif- ficult. The skilled operator may have an unexplainable run of hard luck, and be- ginners sometimes are unusually lucky. Both have to contend with the most un- certain factor of all, the weather.

To eliminate this unfavorable factor, C. C. Lounsbury of Ames, Iowa, who re- ported his experiments at the Washing- ton meeting of the Northern Nut Growers' Association, attempted bench grafting of black walnuts. As a result of his work he believes the method has possibilities and his suggestions are set forth in full as follows:

1. Bench grafting should be tried by nurserymen to supplement stock of grafted trees in dry years.

2. In the absence of a greenhouse, or an electric case, hot callused grafts can be made anywhere and set outdoors with success if the spring is warm and moist, but grafts should be placed where they can be watered if necessary and properly hardened off before lining out.

3. Scion wood used should be at least three-eighths of an inch in diameter, and lower buds of new wood or two-year wood have proved best.

4. Seedlings should be first year and should be one-half inch or more at the crown, and roots should be cut off as little as possible.

5. Roots should be grafted just below the crown, and the upper tongue of the root pared so the root will not sprout. Walnuts split easily, so short whip grafts tied with some strong material like ad- hesive tape seem to make better unions and give better results when not under ground.

6. Hot callusing should be at 75 to 80 degrees F, and should not be done until the normal time, so the weather will be warm outside when the grafts are set out.

7. Walnut scions should not be hot waxed, but should be sealed at the tip with cold wax, adhesive, or lanolin to prevent evaporation. If the weather gets too dry, bags can be tied over the scions with rubber bands until the grafts are well started.

8. Grafts may be tied with waxed cord, waxed cloth, adhesive tape, or rubber bands, but hot wax seems to injure wal- nut grafts more or less at all times.

9. Rubber bands do well underground but adhesive tape is better above ground, as it holds grafts more firmly and still lets the sap out so it does not sour, and loosens in time to prevent strangling.

10. Grafts made in the fall or winter made the best growth, insects did not bother them until spring, it gave time to mature the graft by fall, and they can be put directly into storage for sale.—GEORGE L. SLATE, Sec'y, Northern Nut Growers' Assn., Geneva, N.Y.

TREE BANDS

BETA-NAPHTHOL TREE BANDS "SURE KILL" THE worms. Write for latest prices and literature. M. A. KOELLER Barry, Illinois.

WRITE FOR CIRCULARS AND PRICES. CHEMICAL- ly treated Bands. Satisfaction guaranteed. EDWIN H. HOUSE, Saugatuck, Michigan.

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C.O.D. FROSTPROOF CABBAGE AND ONION Plants. All varieties. 500, 50c; 1,000, 90c; 5,000, \$3.75. Good Plants. Prompt Shipment. GEORGIA PLANT CO., Albany, Georgia.

MARCH, 1933

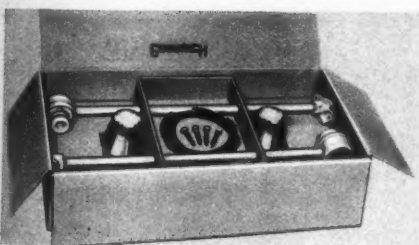
NEW

By HANDY ANDY

Elimination of culls is to be one of the principal endeavors of the National Apple Institute, the nationwide apple advertising and promotion organization. Many cull shipments result from poor judgment of packers, but I also believe that properly constructed packages will do much to cut down the curse of culls on modern fruit marketing, for well packed, top-grade fruit is often thrown into lower grades by damage occurring in storing, shipping, and marketing when containers do not offer protection. My address is AMERICAN FRUIT GROWER, 1370 Ontario St., Cleveland, Ohio, so drop me a line if you have any ideas on uses of the new type containers.

YARD LIGHT •

Rural electrification has probably progressed further in the fruit field than in any other branch of agriculture. Fruit growers, because of



their specialized operations, have utilized electricity in many ways. Perhaps one of the most beneficial uses of electricity on fruit farms is for lighting of homes, packing houses and yards. For the latter application a new light has just been announced: Packed for shipment in a sturdy carton, the light is ready for assembly when received. A large reflector provides an abundance of illumination and the light parts are protected against weathering by a coating of heavy enamel. Views of the new light

MARCH, 1938

- YARD LIGHT
- CORRUGATED APPLE BOX

in the shipping carton and also assembled are shown in the accompanying illustrations.

While I'm no advocate of manicures for fruit growers, I do know that many of us have or are suffering from brittle, cracked fingernails. It's not possible to handle spray materials, grade and wash fruit, work with tractors and cultural equipment without breaking fingernails and scratching up hands. One of the ways to keep hands and nails in good condition is to apply glycerine. Best treatment for nails is to soak fingertips in the glycerine. Glycerine with rose water or other toilet water has long been a remedy for chapped, rough skin.

CORRUGATED APPLE BOX •

Of particular interest to all apple shippers is a new bushel container for jumble packing made entirely of corrugated paper. It is, of course, much lighter than a wooden box, yet is strong and rigid when assembled.



A new style of reinforcing is said to overcome the difficulty which has marked some of the other apple containers of this size made of corrugated paper—the tendency to bulge and distort in handling. In tests, this new container sustained a dead-weight of 400 pounds, it is reported, without distortion, showing its practicability for carload and truck shipping and for storage.

Both box and cover come flat and no tools or machines are necessary for assembling—just glue or a few short lengths of gummed tape.

On many fruit farms where dusters are used there is frequently a need for nicotine dust. Directions for making small quantities of dust are: Place hydrated lime, dusting sulphur or other dust to be used in a can, churn or small keg which has a tight-fitting lid. Pour the correct amount of 40 per cent nicotine sulphate over the dust in the container; add 10 to 15 small stones about the size of hen's eggs, close the lid tightly and roll the container back and forth for about 10 minutes. For a one per cent dust, use one and one-fourth pounds of 40 per cent nicotine sulphate (commercial nicotine sulphate) to 48¾ pounds of the dust.

AMERICAN FRUIT GROWER

THAT BIRD DOESN'T KNOW
SANI-FLUSH
CLEANS OUT ANTI-FREEZE



NOW'S THE TIME TO CLEAN OUT YOUR RADIATOR

A WHOLE WINTER'S accumulation of rust and sludge is choking the cooling system of your car. Clean it out! You can do it in a few minutes—for 10c—with SANI-FLUSH.

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Sani-Flush Safe NOT CAUSTIC
KEEPS RADIATORS CLEAN

KINKADE GARDEN TRACTOR

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63 Main Street Oakville, Connecticut

SUCCESSFUL ORCHARDS

● A "ROUND TABLE" PAGE FOR EVERY GROWER ●

NORTHERN GROWER HAS IRRIGATION PROJECT

BY way of a clipping from his local newspaper, Minnesota fruit grower Albert Loffelmacher reports on his recently planned irrigation project.

The clipping states that a dam is to be built on a small creek. Water impounded behind the dam will be pumped to the orchard and small-fruit plantings. Cost of the dam has been set at approximately \$5,000. The creek across which the dam will be constructed flows into the Minnesota River which borders the Loffelmacher orchard.

Concerning his fruit farm operation, Mr. Loffelmacher says: "I have 40 acres of apple trees interplanted with plums and cherries. The plums and cherries will be removed as soon as the apple trees need all the room. Apple trees are spaced 36 by 38 feet.

"I started this orchard in 1920, putting out about 300 trees each season. I am top-working standard varieties such as Red and Golden Delicious, Winesaps, and McIntosh on Hibernial stock. Up to the present time I have had no loss and very little injury except on Winesaps during the winter of 1934-35.

"I am constantly testing new and standard varieties for this climate and believe that with proper care and management many of these varieties can be successfully grown in this section.

"Nearly all my crops are sold retail direct to customers who travel as far as 75 miles, some coming several times for berries, plums, cherries, grapes, and apples. I intend to put out another block of 40 acres of trees as soon as I have decided on varieties best adapted to the climate, soil, and trade demands."

CONTROLS BORERS WITH TREE PAINT

FROM a sickbed, one of our Illinois readers, W. B. Dean, writes: "I saw an item on last month's 'Round Table' page about the control of the flat-headed apple tree borer. I think I have a better way of controlling this insect as well as other pests. It is put on four or five times a year and I know it works well on my own trees. The ingredients of my mixture are: two quarts of coal tar, one quart of crude carbolic acid, one ounce of blue vitriol, one ounce of arsenate of lead, one pound of sulphur, and enough hydrated lime to make the mixture the consistency of paint. Apply with an old paint brush. If the bark is scaly or rough, clean with a hoe or some such instrument.

"The mixture is healing to the bark, my trees are healthy, and the bark is green. Weak crotches have been made strong by this paint. I have drawn together split branches with wire, using pieces of old tire to protect the bark, and then put on plenty of this tree paint every two weeks. In one year's time the crotch is strong again. I cannot say enough in favor of this tree paint."

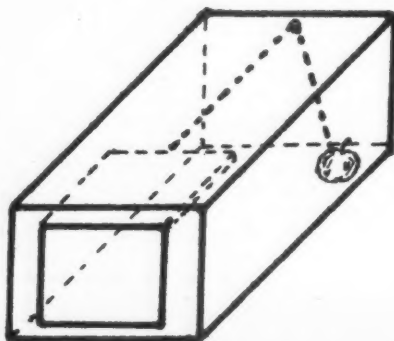
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This page is a place for growers to get together and exchange experiences and ideas. The beginner, as well as the veteran, will find here many practical suggestions for better and more profitable fruit growing. In return for the helps you receive from this page, be ready to pass on, for the benefit of others, any new idea, method or procedure you have developed or run across. Just jot it down as it occurs to you (a postcard will often do) and mail it to the "ROUND TABLE EDITOR," AMERICAN FRUIT GROWER. Don't worry about fancy writing. What the readers of this page want are practical pointers—that are to the point.

APPLE TREE WOOD IS VALUABLE

I. W. DICKERSON of Iowa reports, "Sound apple tree trunks and good sized branches are in considerable demand for tool handles, drawer pulls, chess men, toys, and other uses. Fruit growers who have supplies of this type of lumber on hand should get in touch with the U. S. Forestry Service, Washington, D. C., for a list of possible buyers."

This looks like a way to get rid of some of those trees that have been pulled out other than by burning them. Even if the returns from them take care of only the expense of pulling the trees, it will help cut down operating costs.



The type of box rabbit trap used by G. B. Cooper who reports a good catch.
AMERICAN FRUIT GROWER

SOIL MANAGEMENT FOR CITRUS GROVE

"ON our 75 acres of oranges, lemons, and grapefruit," says the California Barnhill Ranch manager, "we maintain a cover crop from November through February. During the spring months we disk and apply fertilizer. Irrigation is the principal soil management practice from May through September. Then manure is applied in October and the cover crop goes in again in November. Pipelines with standpipes at each tree row carry water for irrigation. We are planning to expand our fruit planting with lemons and avocados."

SIMPLE RABBIT TRAPS GIVE GOOD RESULTS

G. B. COOPER is the second Minnesota grower to take his place at the "Round Table" this month. He writes:

"I thought I would contribute something for other fruit growers. It is a rabbit trap that has been a success for me. Any ordinary box with a drop door cut out of the end will serve as a trap. The door opens into the inside of the box. Any type hook will hold the door open.

"A piece of salted apple is placed in the back of the box in a bent wire holder. A string runs from the bait through a steeple to the hook holding up the door. When the bait is moved, the string is pulled and the door falls shut.

"I have had several of these traps out since early fall. My little wirehaired fox terrier watches the traps each morning. If there is a rabbit in a trap, he stands by it and barks. Any dog could be trained to look after the traps. I have even caught jackrabbits in my traps."

LOCAL COLD STORAGE USED BY CUSTOMERS

AN AMERICAN FRUIT GROWER reader of 20 years' standing is grower H. B. Krebs of Pennsylvania. He reports:

"During the past season we sold a good many apples to consumers who put from one to 15 bushels in a local cold storage. We believe this is rather unusual."

YOUNG ORCHARD SOILS ARE CULTIVATED

THE Kelly Brothers, Alabama orchardists, have this to say about their planting and soil management operations:

"We are planning to expand our orchard plantings which at the present time are made up of about 80 acres of Early Harvest, Kelly's June, and Transparent apples, Kieffer pears, and Damson plums. The trees are planted 30 by 30 feet. Most of our planting is done in February. After the trees are set we cultivate the soil in the young orchards for four or five years and then sow down in lespedeza."

This is another instance of the popularity of lespedeza as a cover in southern orchards.

MARCH, 1939

EXTRA

Orchard Brand News

EXTRA

VOL. 2, NO. 2

MARCH

1938

EASTERN EDITION

FLASH! TWO NEW FUNGICIDES PROVE ADVANTAGES IN CONTROL TESTS

MICRO-SPRAY, NEW SULFUR FUNGICIDE OF TRUE MICROSCOPIC FINENESS, STEPS UP EFFECTIVENESS and Uniformity of Control

Micro-Spray Sulfur enters the field after intensive testing against other sulfur fungicides. This super-fine micro-spray has a particle size that is many times finer than ordinary 325 mesh wettable sulfurs. MICRO-SPRAY obtains increased effectiveness through an entirely new wetting principle that assures a more thorough and uniform deposit.

Micro-Spray, by virtue of its high content of extremely fine, pure elemental sulfur, substantially increases protection against apple scab and other fungus diseases without the caustic action characteristic of lime sulfur solution.

Many leading growers have found in Micro-Spray a safer and more dependable fungicide. In addition to improving the growth of foliage and finish of fruit, it has proved easy and economical to use.

"34" Copper Spray Contains Maximum Copper Consistent with Safety

The new Orchard Brand "34" Copper Spray has consistently proven its superiority over the old types of copper fungicides. This new spray contains nearly three times as much metallic copper as ordinary Bordeaux Mixture. An exclusive process combines high potency with a broader measure of safety.

This new copper spray reduces the amount of bulk in the spray tank, being used in substantially reduced poundage. Due to its high concentration and greater toxicity per unit of copper, "34" is ultimately more economical.

"34" contains no free lime, and deposits a thin, high potency film that does not interfere with fruit coloring or leaf activity. The unique chemical

stability of "34" affords valuable protection against fruit russetting. This means also that "34" is effective on fruit and foliage for a longer period of time.

"34" is easy and convenient to use. It is merely sifted from the bag into the spray tank—thus no preliminary mixing is required. Furthermore, it will not clog the spray nozzles, thereby saving a lot of time and energy.

CONTROL: "34" is recommended particularly for control of: Scab, Blotch and Bitter Rot on Apples, Peach Leaf Curl, Cherry Leaf Spot, Black Rot of Grapes; also for certain fungus diseases which attack potatoes, tomatoes and other truck crops.

GENERAL CHEMICAL COMPANY

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GET THE **DOUBLE** PROTECTION

OF

DOW "MIKE" SULFUR!



Over and over again "MIKE" Sulfur* has proven itself the outstanding fungicide because it does a two-fold job.

First is the highly effective protection "MIKE" Sulfur gives against apple scab. This results from its high toxicity due to its extreme fineness. Having a particle size of approximately 1/5000 of an inch, or 15 times finer than 325 mesh, "MIKE" Sulfur provides the uniformity of coverage and strong adhesion essential to effective control.

The second and equally important feature of "MIKE" Sulfur is that it promotes the growth of healthy and abundant foliage so essential to successful crops.

Research indicates that for every apple produced, a tree requires from 40 to 50 leaves. Thus, the heavier the foliage, the greater the crop a tree can mature. A specific tree sprayed with "MIKE" Sulfur showed an average of 5.5 leaves per spur, while trees sprayed with caustic materials were able to retain only 2.5 leaves.

Thus, "MIKE" Sulfur gives the double advantage of completely controlling apple scab—*plus* freedom from the danger of burning foliage.

Include "MIKE" Sulfur in your spray program. Profit by the *double protection* of this better spray material.

THERE IS A DOW INSECTICIDE FOR EVERY PURPOSE

THE DOW CHEMICAL COMPANY, MIDLAND, MICHIGAN
Branch Sales Offices: 30 Rockefeller Plaza, New York—Second and Madison Sts., St. Louis—Field Building, Chicago

DOW*

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